



This issue of **NOTEWORTHY** is dedicated to classroom teachers who devote their time and energy to the education of the young.

People who choose teaching for a career do so neither for money nor prestige—though both should be greater. Some deeper purpose, a larger vision of service drives them. And the work is rewarding. There is nothing like having a student who has been having trouble suddenly "turn on" to learning. On the other hand, there is nothing more depressing than having a student you have been nurturing drop out.

How does a teacher keep perspective and rekindle vision?

We offer the following as a way teachers can renew themselves each day. It comes from Bob Marzano's **TACTICS** for **THINKING**, developed by McREL and published by ASCD. We hope that this issue of **NOTEWORTHY** is of use to those to whom it is dedicated and to other educators as well.

#### PREPARING YOURSELF FOR INSTRUCTION

Given that the teacher is the key to instruction and learning, make sure that you are attitudinally prepared to teach. This can be facilitated by going through a "clearing process":

1. Prior to instruction each day, affirm your purpose as an educator in general and for that day in particular, and identify any alternate purposes. "Purpose" here is not used in the conventional educational sense (e.g., what you want the students to learn that day). Rather, we mean the "vision" you have for education—the reason you started teaching in the first place. This purpose or vision might be something you have forgotten along the way (e.g., "to contribute to the world by making available to students the tools of self-awareness"). On the other hand, alternate purposes are usually quite easily identified. They are commonly those thoughts and beliefs upper-most in your mind as you teach (e.g., "My purpose is to get through this class and go to lunch").
2. Visualize the students in your class and become aware of any negative beliefs or emotions you have about them. This is most easily accomplished by thinking of the characteristics you associate with your students. Which ones do you consider intelligent? Which ones have you already decided will fail or do poorly?
3. Make a conscious decision to let go of alternate purposes, negative beliefs and feelings about students. At first, you can probably do this only at the level of declaration, you will still have these thoughts and feelings as you teach. However, your declaration will actually have created a new context in which to operate, and, in time, negative beliefs and feelings will fade.
4. As you interact with students, be aware of your thoughts, and consciously select behaviors consistent with your purpose or vision. For the most part, choose behaviors from the position: "If I were trying to actualize my vision, what would I be doing?"

Though simple, this four-step process establishes a framework or context that allows you to regenerate when your energy and intentions fade.

## TABLE OF CONTENTS

Ahead of the Curve: How to Teach in the Information Age.....	4
How to Teach Teachers: It's Different from Teaching Children .....	11
Reform and You: How to Make a Difference.....	15
Increasing your Options: Models of Instruction.....	19
Learning-to-Learn.....	25
Active Mathematics Teaching.....	28
Beginning Teacher Evaluation Study (BTES) .....	31
Explicit Teaching .....	33
The 4Mat System.....	36
The Hunter Model.....	39
Mastery Learning.....	42
At Last: Good News From a Study of School Improvement.....	44
Rural Renewal: An Institute for Rural Teachers.....	47

NOTEWORTHY is a publication of the Mid-continent Regional Educational Laboratory (McREL). McREL is a non-profit organization, funded, in part, by the Office of Educational Research and Improvement, Department of Education, under Contract Number 400-86-0002. The content of this publication does not necessarily reflect the views of OERI, the Department or any other agency of the U.S. Government. McREL, founded in 1966, serves a seven state area: Colorado, Kansas, Missouri, Nebraska, North Dakota, South Dakota and Wyoming. Its mission is to create a community of interest among those individuals and organizations interested in learning how to help schools meet the needs of an ever changing society. The key strategy of the Laboratory is to identify and encourage the use of knowledge that improves education.

Executive Editor:	C. L. Hutchins
Editor:	Jo Sue Whisler
Contributing Writers:	Robert Ewy Don Montague Robert Marzano
Graphics & Design:	Steve Niemczura
Production Assistance:	Carol Meyer

## McREL Offices

12500 E. Iliff Avenue  
Suite 201  
Aurora, CO 80014  
(303) 337-0990

4709 Bellevue Avenue  
Second Floor  
Kansas City, MO 64112  
(816) 756-2401



Comparing the complexity of the learning process needed in the Industrial Age to that needed in the Information Age is akin to comparing the differences between the Model-T Ford and a supersonic jet transport. The tried-and-true experience of the past is not wrong, but it must be updated to insure that what the student learns is relevant to today and tomorrow.

### Changes in Curriculum

Much of the past emphasis of curriculum was to provide students with facts and concepts. It was often assumed that knowledge automatically led to skills development.

Research (Bloom, Carkhuff) has demonstrated that this is not the case. Knowledge and skills development are separate but interrelated. When we remember that learning is a change in behavior or ability, it is easy to understand that all learning culminates in a skills objective or outcome. A major problem in education today is that we teach facts and understanding but pay insufficient attention to the action or application phase of learning.

Knowledge changes constantly. Content will always be important as a means of teaching the processes of learning rather than as end in itself. Teachers need to teach not only the relevant content but also to define skills objectives and develop skills content.

### Changes in Instruction

Instruction in the past relied primarily on didactic methods and frequently placed strong reliance on "tell" forms of teaching. Aspy's work suggests that teachers spend up to 80 percent of classroom time talking to students. Other research (Bloom) demonstrates that learning increases when a variety of instructional methods are used. A greater variety of methods not only meets the different style preferences of students, but also begins to address knowledge and skills objectives.

This move to a greater range of instructional methods is facilitated by technology in the classroom. Information technologies (computers, video discs, interactive hookups, etc.) enrich and expand the content in the classroom. As teachers are freed they can devote more effort to the individualizing, personalizing and application of content.

### Changes in Characteristics of Learners

In many schools across the nation, there are changes in the characteristics of students. In the past, teachers could assume that their classrooms would be homogeneous, comprised primarily of Anglo, middle class children from stable homes. Much of the teaching would be accomplished against a rich background provided by the home. This is no longer typical. Many classrooms are filled with children representing a substantial diversity of racial-ethnic, socio-economic and family conditions.

Essential in dealing with this diversity is the teacher's skill at providing a supportive interpersonal environment, designing and structuring content which enters the

learner's frame of reference, delivering instruction in ways which meet the needs of the learner, and reinforcing learning.

### **ELEMENTS OF TEACHING**

Teaching has been analyzed and viewed in many frameworks and from a multitude of perspectives. These may be useful for analyzing the complexities of the teaching process. Teaching skills which form the core of the teaching-learning process may be delineated in four sets:

- I. **Interpersonal Skills of Teaching** -- entering the frame of reference of the learner, personalizing learning and initiating action or applying the learning.
- II. **Structuring and Organizing Content** -- developing the organization of content, skills outcomes, knowledge and skills objectives, and methods of learning.
- III. **Delivering Instruction** -- using skills steps, a variety of methods, following a sequence of instruction.
- IV. **Classroom Management Skills** -- managing time and attention among students, establishing a learning climate and instilling positive expectations for all students.

These four processes are the components of effective teaching -- teaching which moves learners toward the learning objectives. Each of the four is discussed below.

#### Interpersonal Skills

Many educators assume that they are providing interpersonal skills if they treat their students with respect and maintain positive interactions with them. The importance of these behaviors cannot be overlooked, but interpersonal skills which facilitate the learning process extend beyond respect and positive interactions.

To understand these skills, it is important to recall that human beings are social animals. We learn about ourselves from the responses of others. The "looking glass" (Herbert Mead) provided by the responses of others gives us a sense of ourselves and of our identity.

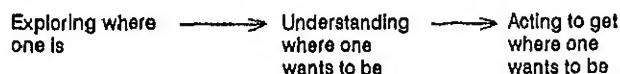
All learning begins with the learner's frame of reference. The way we feel about ourselves and the relevance of the content is likely to determine how we act to learn. Learning follows a regular cycle or sequence.

When we begin to learn we are in an **exploring** phase. This phase is largely intuitive. The learner becomes interested in something, with or without the help of the teacher. Learners may try to figure out what the thing is and does and maybe even why and how it does it. At this point they are finding out what they know and what they can do. They are discovering where they are in relation to the learning experience.

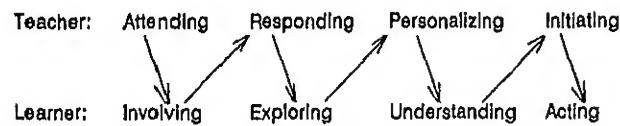
Once learners have explored the learning experience, they are ready to engage in a series of **understanding** activities. The learner begins to understand the learning experience through traditional classroom activi-

ties which provide facts and concepts. As learners grow in understanding, they begin to see where they are in relation to where they want or need to be. This understanding phase is a mediating activity between the content and the learner.

The final phase of learning is acting. During this phase, learners strive to master knowledge and content, repeating and practicing the skills involved until they are readily available to them. Then they can apply the knowledge in some way designed by the teacher or themselves. Having learned the skills of application, learners can continue to apply them or transfer them to other situations. This ability to apply knowledge and skills gives the learner an opportunity to use what has been learned. A visual representation of the three phases is provided below.



Some learners will learn this process through observation and/or trial-and-error. Effective teaching is directed at facilitating the learner through this process. This facilitation is carried out with interpersonal skills and in the development and delivery of content. The actions that the teacher can take to move learners through this process are listed below.



Four basic interpersonal actions by the teacher will facilitate this process. Attending to the student is a pre-learning step to involve the student. Responding to the student supports learner exploration of the material. Personalizing the meaning of the content helps students to establish goals and to understand where they are in relation to where they want to be. Initiating skills steps provides students with the support needed to act to learn the desired knowledge and skills.

Interpersonal skills facilitate learning. They provide the student with an individualized basis for learning and motivation for the learning process. Skilled teachers use these skills to provide the strategies and skills for productive learning.

### Content Structure and Organization

The time devoted to planning the structure and organization of content is a major factor in the quality of delivery. Structuring content begins with two basic assumptions. The first is that all learning culminates in a skills objective. The second is that content must be broken down into small units in a sequential plan. To complete the learning cycle, two skills are needed to teach students how to act to achieve their learning goals—planning and the delineation of skills objectives.

Planning begins with a general delineation of what needs to be accomplished during a specified time period (year, semester, nine-weeks, etc.). This part of planning provides the overview for the course. It should include:

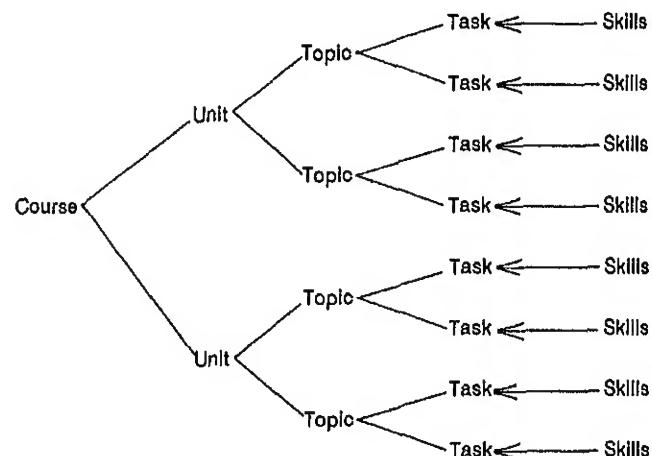
- Units: The large divisions of the course
- Topics: Categories of activities
- Tasks: Actions to be performed
- Skills: Behaviors to be learned

The course delineates the content to be taught: Language Arts, Mathematics, Geometry, Social Studies, etc.

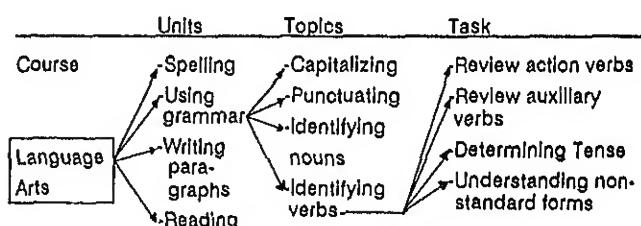
Units are large divisions of the courses. There should be two or more units to a course. For example, one language arts teacher may organize the units into three areas -- reading, writing and speaking. Another may wish to use four units -- reading, grammar, spelling, and writing.

The third level of developing content is to list the topics for each unit. The topics represent the content to be covered in each unit. The next level of planning is to identify tasks to be included in each topic and the skills needed to accomplish each of these tasks.

Thus, an overall lesson plan for a course would include the following:



Outlining the yearly or semester course material gives priorities a useful structure. For example, the structure for a course in language arts might include:



The daily lesson plan breaks the plan down into skills areas. Continuing the example of language arts, some of the skills steps might be:

Tasks

- Reviewing action verbs
- Reviewing auxiliary verbs
- Determining tenses
- Understanding non-standard forms

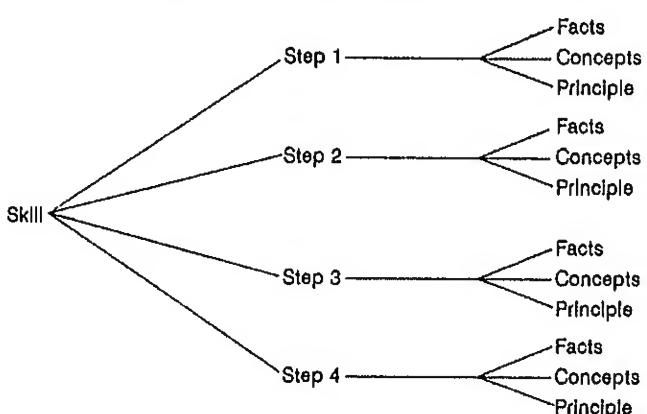
Skills

- Supplying the missing verb
- Changing the form of the verbs
- Identifying the verb in a simple sentence

The basic purpose of outlining the course and the daily lesson is to ensure that content gets divided into units small enough that every child has a chance to learn.

When the skills have been identified, daily lesson plans can be broken down even further. For every skill step, there are supportive facts, concepts and principles that make it possible for learners to learn. Facts are names or labels we use to make an identification. Concepts are the meanings or notions we attach to things (relationships to other things).

Principles usually show a cause-and-effect relationship concerning some aspect of the skill. They can usually be stated using the "If . . . then . . ." format. Thus, when skills have been identified, the lessons can be broken down into steps which incorporate the supportive facts, concepts and principles. A view of this follows.



The structure of the lesson plan provides the teacher with the scope of the information to be included in the lesson.

### Sequence

Another consideration is the sequence of the lesson. An easy way to remember a good process is to think of the word **ROPEs**. Each letter in **ROPEs** stands for a step in the sequence of instruction. The letter **R** stands for **R**eview. The review step prepares learners for the lesson; it helps them understand the relationship between what was learned yesterday and how it is relevant to what is being learned today.

The **O** is for **O**verview. An overview of the new skills, in effect, gives learners a reason for learning the new skill. This also provides the "set" for the lesson.

The **P** step stands for **P**resentation. Presenting the lesson means teaching learners how to do the skill, and

providing learners with the facts, concepts and principles they need to learn.

**E** stands for **E**xercise or application. The exercise step does not introduce new content but involves learners in the repeated use of the new skill.

Last, is the (**S**) **S**ummary step. The summary is another opportunity to review the new skill with learners. Summarize the steps of performing the skill and then diagnose where the learners are in relation to what they have been taught.

**ROPEs** is used to organize the content of the lesson. It includes:

<b>Review</b>	--	A short time spent reviewing information needed to understand the lesson presented.
<b>Overview</b>	--	A few minutes spent showing how the new skill works.
<b>Presentation</b>	--	Time spent teaching the content and the skill steps to the learner.
<b>Exercise</b>	--	The significant time spent having the learners practice the new skills.
<b>Summary</b>	--	A brief time spent reviewing the new skill.

Organizing the structure or scope and the sequence of the content provides the teacher with the skills of curriculum.

### Instruction

Delivering the content calls for a third set of skills -- instructional skills. Research on instruction suggests that the dominant form of instruction is teachers talking to learners. Telling is an important and effective instructional technique for some learners and for some purposes. Tell methods may employ a variety of aids. These may include a textbook, audiotape, transparency, poster, record, or guest speaker. All of these are tell methods which deal with words, either spoken or written.

Another form of instruction is the **Show** method. Showing is critical to learning. When you tell learners about the parts of the digestive system, you may want to show them what the parts look like.

A third type of instruction is the **Do** method. Do methods involve learners in the performance of the new skill. Laboratory activities, field trips and experiments are examples of **Do** methods of learning.

Tell, Show and Do steps may be expanded by including a **Repeat** step and an **Apply** step. The **Repeat** step provides another way for learners to learn the skill in depth. **Apply** steps take it further by having learners use the skill to develop a product. This might be a role play, debate, exhibit, project, model, report, play, project, research, etc.

The important characteristic of instruction is to use a variety of methods. This should be the goal of all instruction.

Teachers are often responsive to varying the methods they use for instruction but forget that instruction may also be provided by others in the classroom. This includes the use of pairs, triads or other groupings for peer learning. For example, using pairs to read to one another is an effective way of increasing reading skills and it is more productive than having one child read to the teacher while the others wait.

### Classroom Management

The fourth component of effective teaching is classroom management. The importance of this component should not be underestimated because it shapes the culture and norms of the classroom. There are two primary aspects of classroom management -- the physical and the emotional.

The physical environment of the classroom includes some elements which the teacher cannot readily control -- sound, light, temperature, and design of the room. But while these cannot be controlled, the teacher should be aware of them and their impact on students. A second part of the physical environment can be controlled by the teacher -- symbols and pictures, the placement of desks, and "rules" about the use of time and mobility within the classroom.

The emotional culture of the classroom is not as visible but it is not less important. Teacher interaction with students will affect their motivation, persistence, and their development of responsibility for learning. The section on interpersonal skills provided earlier outlines ways to handle the one-to-one interactions with students. These are group factors that demonstrate how a teacher's interaction with students may reflect the expectations, reinforcements and individualization skills of the teacher.

Research has shown that teachers tend to:

- interact more with perceived high achievers and ignore and interrupt low achievers more frequently;
- ask more and higher level questions of perceived high achievers and ask low achievers questions that require simple answers;
- follow up with probing questions for perceived high achievers, yet call on someone else if a perceived low achiever is unable to provide a prompt, accurate response;
- wait a longer time for perceived high achievers to respond to questions and cut off response time for perceived low achievers who hesitate;
- seat perceived high achievers closer to their usual position and cluster perceived low achievers further away;
- praise perceived high achievers more often and criticize perceived low achievers more frequently;

- provide perceived high achievers with detailed feedback but give less frequent, less accurate and less precise feedback to perceived low achievers;
- demand more work and effort from perceived high achievers and accept less from perceived low achievers.

The ways that teachers determine the perceived high achievers is an individual process, but research demonstrates that low socio-economic, racial-ethnic minority and female students are frequently identified as low achievers and given differential treatment. Few teachers consciously treat children differently; much of their behavior is unconscious. This unconscious treatment is likely to have self-fulfilling results. Children quickly pick up the different patterns of treatment and the child who is perceived to be a low achiever begins to believe that he/she cannot achieve. Conversely, a child who is perceived to be a high achiever is reinforced and makes a greater effort to be successful.

Learning the skills of classroom management is facilitated when teachers have an opportunity to learn patterns of effective behaviors, are provided with guides for observation, and can engage in peer observations with other teachers and staff.

Each of the four major elements of teaching -- interpersonal skills, curriculum development, instruction and classroom management -- requires a complex mixture of attitudes, knowledge and skills for the teaching process to be maximally productive. Included at the end of this article is a checklist that can be used to assess teaching with regards to these four elements. While learning will occur even when the elements are not provided in effective ways, the potential for learning increases dramatically for all students when teachers make a systematic effort to provide strong, effective effort in each of the four areas. We are a long way from reaching the limits of learning. Only when teachers are provided the support and resources to achieve high skill levels for each of the four teaching elements, do we begin to ensure that children are prepared for the future.

\*This article was adapted in large part from the teacher training and human resource development models of Robert C. Carkhuff. Further information may be obtained from Human Resource Development Press, Box 863, Amherst, Massachusetts, 01002.

## CHECKLIST FOR OBSERVING TEACHING

Listed below are questions which have been designed to assess the quality of four teaching elements. They are provided as a guide for observing the elements of teaching described in the previous article.

### Interpersonal Skills

Does the teacher:

1. attend to students on a consistent basis? \_\_\_\_\_
2. respond to the feelings and affect of the students by reflecting their feelings? \_\_\_\_\_
3. help students understand the reasons for their feelings (personalizing)? \_\_\_\_\_
4. work with students to ensure that they know the action steps they can take to achieve their goals (Initiating)? \_\_\_\_\_
5. make an effort to remain open to influence from the student if the response is not "on target"? \_\_\_\_\_
6. try to select feeling words which best describe the student's feeling and vary responses? \_\_\_\_\_

Yes      No

### Curriculum Structure and Content

Does the teacher:

7. have a course plan which identifies the units, topics, tasks and skills which will be covered during a specified period of time? \_\_\_\_\_
8. have a daily plan or structure which identifies the skills and supportive facts, concepts and principles needed for the lesson? \_\_\_\_\_
9. begin the lesson with a review of what was covered during the last session? \_\_\_\_\_
10. provide an overview with the objectives and skills which will be learned during this period? \_\_\_\_\_
11. organize a presentation which provides students with the facts, concepts and principles needed to learn the designated skills? \_\_\_\_\_
12. provide exercise activities or skills practice where students can practice and apply the learnings? \_\_\_\_\_
13. end the class with a summary of what was covered and "learned" during the class period? \_\_\_\_\_

---

### Instruction

Does the teacher:

14. rely too strongly on "tell" forms of instruction?	_____	_____
15. include "show" methods of instruction to demonstrate the meanings of the material being covered?	_____	_____
16. include "do" activities where students apply or learn the skills of the lesson?	_____	_____
17. use other students as part of the instructional process?	_____	_____
18. vary instructional methods to ensure meeting the needs of all students?	_____	_____

### Classroom Management

Does the teacher:

19. make an effort to use the physical environment in ways which can increase learning?	_____	_____
20. use classroom symbols to reflect the diversity of groups in the classroom?	_____	_____
21. make an effort to ensure that students are seated in some "neutral" fashion so that interactions among students on the basis of race, ethnic and sex will be encouraged?	_____	_____
22. give non-verbal behaviors that indicate differential respect of students on the basis of race, ethnic group, or sex?	_____	_____
23. interact with certain groups of students at a different level of intensity or frequency?	_____	_____
24. provide differences in wait time for various groups of students?	_____	_____
25. reinforce students differentially on the basis of race, ethnic group or sex?	_____	_____
26. demand less work from some groups of students?	_____	_____

# HOW TO TEACH TEACHERS: IT'S DIFFERENT FROM TEACHING CHILDREN

By Toni Haas

"He talked down to me."

"I hate to go somewhere, sit for an hour and be lectured at."

"She may know her stuff, but it wouldn't work in my classroom."

"That was a waste. I'd rather spend the time in my classroom."

These and other unkind comments often result from staff development sessions that fail to recognize the particular needs and desires of adult learners. While we wouldn't think of seating workshop participants in kindergarten chairs, or insist that our colleagues line up before going to the bathroom, we often do the psychological equivalent by failing to recognize that adults learn differently from younger people. Techniques appropriate and useful to learners in preschool or high school are inappropriate for adult learners.

Research and experience suggest specific ways to reach adult learners. This article presents research-based assumptions underlying adult learning, a framework for the design of staff development, and incorporates tips and craft knowledge from McREL's experience with the best staff developers across the country.

Malcolm Knowles (1970, 1978) coined the term "andragogy" which means "the art and science of helping adults learn." Knowles distinguishes between teaching children (pedagogy) and educating adults because teaching and learning principles are different for each. He notes four crucial differences between adult and children learners:

1. The adult's self concept moves from dependency, in childhood, toward self direction. This means adults have need to experience themselves and be perceived as autonomous and in control. Learning situations must be flexible and provide choices.
2. The adult accumulates a reservoir of experience. This becomes a resource for learning. But it means that more variety in cognitive styles will confront the trainer who must recognize and provide opportunities to share the wide range of expertise in the group.
3. The adult's readiness to learn is linked to his or her social roles. If an adult's experience is devalued or ignored, she/he may feel rejected. On the other hand, learners asked to

take on more responsibility for learning than they expect or are used to, often respond with anxiety and even withdrawal (Smith, 1982). Successful training provides a balance between independence and interdependence, a combination of individual and group work, and recognition.

4. The adult wants to see some immediate application for the knowledge. His or her orientation toward learning shifts from subject centeredness to problem centeredness. Training must provide at least some answers to the question, "How does this help me Monday morning?"

How can staff development programs address adult needs? The following sections deal with adult needs and propose a framework that has a high probability of improving adult education and staff development. This framework appears in McREL's TACTICS program. It was developed by Dr. Robert Marzano and Dr. Daisy Arredondo (1986) and is useful for all adult learners -- teachers, administrators and staff -- regardless of the specific content of the session.

## A FRAMEWORK FOR TEACHING ADULT LEARNERS

The most effective district staff development programs are guided by a learning paradigm that, initially, is taught directly and referred to consistently throughout all the district training programs. It provides participants with an "anticipatory set," a concept that appears to help learners of all ages. In brief, participants are encouraged to take responsibility for their own learning. Attention control and deep memory processing techniques are taught. Participants learn to refocus their attention, become aware of their level of attention and match it to the requirements of the material. The trainer asks the following questions:

1. Are you attending to thoughts unrelated to this session?
2. Do you believe this session is valuable?
3. Are you committed to being involved in this session or do you want to coast?
4. Do you have a sense of power about your ability to perform well in this session or do you have a sense of sinking?

Next comes a commitment phase. The trainer leads the participants through the following steps:

1. Participants are invited to hold off or "bracket" any thoughts unrelated to the session. This is

crucial for training adults, as each comes with a complex life.

2. Participants are encouraged to generate for themselves interest and value in the session. Most staff development sessions are in some sense voluntary. A powerful technique is to convince the administration of the importance of interest and relevance for adult learners. The trainer is then free to invite participants to create interest and meaning for themselves or to leave. Thus, responsibility for learning is placed where it belongs -- on the participant, not on the trainer.
3. Participants who remain (and almost all will) are invited to commit to being involved and to make the session worthwhile. The trainer can indicate that this effort requires appropriate attention control, creation of meaning, the setting and monitoring of goals, and asking for help when a point is not clear.
4. Finally, participants are encouraged to commit to mastering and using the material presented in the session.

The next step involves goals. The power and long term effects of goal setting have been well documented (see Frese and Sabini, 1985). Helping participants set and use goals is the final part of the responsibility frame. The goal section has six steps:

1. Participants are asked to write down their personal goals for the session.
2. The trainer then presents her/his goals and invites participants to integrate the trainer's goals with their personal goals.
3. During the session, participants are asked to monitor their progress towards or away from their stated goals.
4. Participants are asked to correct their behavior, as necessary, or seek help towards attaining their goals.
5. Finally, after the session, participants decide if they have accomplished their goals.
6. They, then, evaluate what worked and what did not work relative to their goals.

The Vallejo, California Professional Development Center uses a log for this process. All participants are given a log at the first training session. They are encouraged to use the log to make notes and to write down goals. It becomes a journal of personal growth and learning.

The responsibility frame provides an advance organizer when used consistently in a district's staff development program. It places responsibility for learning on the participant. The responsibility frame makes expectations clear -- important when training adult learners. Explicit instruction in the parts of the frame takes time initially, but soon becomes proceduralized and almost automatic. It also provides a model for teachers to use in classrooms.

Research on information transfer suggests that teachers are more willing to use such a model when they have personally experienced its power.

#### TIPS AND CRAFT KNOWLEDGE

In addition to the consistent use of the responsibility frame, other techniques have proven effective with adult learners. McREL has collected the following tips and craft knowledge from research and colleagues across the country.

Enhancing the self-concept and respect of participants is as essential for adult learners as it is for children. It helps to provide participants with name tags (if the trainer does not recognize them by sight). Make sure the names are large enough to be read from any place in the room, and recognize participants by name.

Adults seem to learn more when training sessions take advantage of the experience and skills in the room. Schedule time for reactions and discussion in pairs and triads as well as in small and large groups.

The workshop or session presentations should provide time to discuss immediate applications to real world problems. This can be difficult. The strategy that McREL finds most useful is to have teachers meet in grade common or subject common groups, share perceptions of the session and discuss (with questions provided by the trainer) "Monday morning" applications.

Time is important for busy teachers and administrators (and have you ever known one who was not busy?). "To an adult, time is a limited and precious commodity not to be wasted on the irrelevant. Time that an adult is willing to devote to learning must be used expeditiously" (Sakata, 1984, p. 6). The expeditious use of time can be accomplished through briskly paced presentations, delivered with high energy. Audiences pick up the physiological set of the speaker and raise or lower their own energy level to match. An initial discussion of the shared responsibility for the success of the session is necessary, but not sufficient. The leader of the session must present her/himself as engrossed in the material before he/she can generate interest in others.

Finally, in terms of process considerations, a good summary was designed by Dr. K. Patricia Cross (1983). She says progress toward goals can be facilitated for adult learners when:

- the presentation of new information is meaningful and includes aids that help the learner to organize and relate it to previously stored information.
- the presentation is paced to permit mastery.
- one idea at a time is presented and competing intellectual demands are minimized (this is another reason to teach attention control, see above).

- frequent summarization occurs.

## COGNITIVE AND NON-COGNITIVE FACTORS AFFECTING STAFF DEVELOPMENT

In addition to process considerations, cognitive and non-cognitive factors influence the effectiveness of staff development. Each will be dealt with briefly in the sections that follow.

Cognitive factors in training adults include learning styles. According to Know (1977), a representative sample of adults in their fifties exhibits greater differences in cognitive style than a representative sample of 20-year-olds. Smith (1982) defined cognitive styles as "the individual's characteristic ways of processing information, feeling and behaving in learning situations" (p. 24). Cognitive (or learning) styles provide a rich area for investigation. Many schema have been proposed including field dependent and field independent (Witkin, Cox and Friedman, 1976); and idealistic, pragmatic, realistic, and existentialist (Ward, 1982 based on Kolb, 1977, and Hagberg and Lelder, 1978). So far, a single or unified field theory has not emerged, and most research suggests that adult learners display a range of styles. The sensitive trainer will accommodate the several ways of learning -- presenting material through lecture, discussion, visual and auditory aids and providing time for reflection. A variety of approaches will serve different learning styles.

Non-cognitive factors, unrelated to inherent ability, also affect adult learning. Included in this category are physiological changes and affective factors such as meaningfulness and anxiety (Sakata, 1984).

Physiological changes in adult learners may affect how much new material can be learned and at what speed. This is a particularly subtle point to keep in mind given the "greying" of the school work force. The following are suggestions for addressing non-cognitive learning differences related to physiological changes.

Researchers estimate that as much as 85% of all learning occurs through sight (Lovell, 1980). This suggests a need to maximize the use of visual aids and to pay careful attention to legibility and attractiveness. Credibility is enhanced by presentation, and we have all suffered through tiny, unreadable overheads presented dimly on a too-distant screen. Most people see best at age 18. A gradual decline takes place over the next 20 years, with a sharp drop between ages 40 and 55.

Hearing is also affected by age. A gradual decline in hearing acuity occurs. By age 60, more than 95% of the population shows measurable hearing loss, significant enough to interfere with communication.

Finally, reaction time -- the time required to perceive a stimulus, transmit it to the brain and respond -- also increases with age. Knox (1977) found, however, that "when they can control the pace, most adults in their forties and fifties have

about the same ability to learn as they had in their twenties and thirties" (p. 422).

Trainers and facilitators can deal with each of these physiological changes in the following ways:

1. Present material in an unhurried fashion, repeat key material, provide a stress-free environment, arrange times when participants control the pace, and allow time for reflection.
2. Setting is important. The room should be well lit and arranged so that people can choose how close they want to sit to the speaker.
3. The light source should be constant and indirect. Use maximum contrast in visual materials and only include important and relevant terms on chalkboards or newsprint.
4. To accommodate adults with possible or actual hearing problems, eliminate outside noise. Remain in one position as much as possible so that listeners can observe gestures and pick up clues to meaning.

Other non-cognitive factors that affect adult learning include meaningfulness and a controllable level of anxiety. Professionals often feel anxious in a training situation. Smith (1982) found that though professionals do not, as a rule, doubt their learning ability, "participation and learning are affected by the need to avoid revealing professional incompetence in public" (p. 52). Facilitators and trainers must "create a climate that minimizes anxiety and fosters confidence and positive thinking" (Sakata, 1984, p. 11).

## TRAINER EFFECTIVENESS

The attitude of the trainer plays a large role in creating climate. The trainer can control his/her attitude in much the same way that he/she encourages participants to control theirs. The following are suggestions to increase effectiveness of the trainer. Enthusiasm and high energy come first. One way to generate the necessary energy and enthusiasm is to develop your own ritual for the training experience:

1. Consider yourself responsible for the success of the session.
2. Arrive early. Make sure the arrangements are appropriate. Take a few minutes before the participants arrive to quietly remind yourself why you chose this work and why you stay (your vision).
3. Imagine the faces of the participants and check your attitude toward them and the training session. If you have negative thoughts and feelings, consciously put them aside.
4. Set goals for the session that incorporate your vision. Monitor your progress toward or away from your goals as the session progresses.
5. Warmly greet participants as they enter. Together, in the course of the session, you will

create a unique learning community; you are collaborators in making a difference

6. Encourage questions. Openly seek help when you do not know the answers. The way you handle advance organizing, wait time, and learning from questions may be the most important thing the participants learn, as you are modeling these behaviors. Remember, you are always teaching.
7. Finally, enjoy what is going on. The most effective behavior is what the research calls the 'flow state,' when a skilled practitioner practices a skill with no self-consciousness (Csikszentmihalyi, 1975). Energy seems in harmony in the flow state. People perform at their peak, far above their expectations. You are well prepared, you are sharing important information, you are a member of a learning community. You can be more effective than you ever dreamed, and your effectiveness will be echoed by the participants.

## SUMMARY

In sum, adult learners have training needs that differ from younger people. The trainer and the trainer's attitude are crucial. For adult training to be effective, the learning environment must be physically and psychologically comfortable. Adults can and should be held responsible for learning. A good staff developer can provide the tools to accept and act on that responsibility. Adults bring rich and varied experience into the classroom. This represents a valuable asset to be acknowledged, tapped and used. Adults learn and learn well from dialogue with respected peers. New knowledge has to be integrated with previous knowledge; this means participation! Integration of new knowledge and skills requires time and effort. Working on applications to back-on-the-job problems helps. Action plans, accountability strategies and follow-up training all help to "make the difference." That is what staff development is all about.



*"We turn now to the problem of self-induced inhibition of teacher acting-out responses during educational interfaces which include significant aggressive pupil behavior inimical to the teaching/learning environment. Or, as we might call it, how to keep from clobbering them when they raise hell."*

## REFORM AND YOU: HOW TO MAKE A DIFFERENCE

By Toni Haas

I believe historians in the year 2059 will regard the American experience in democracy as a great and successful adventure of the human race. Furthermore, as an essential part of this adventure—indeed as a basic element in the twentieth century—they will praise the revolutionary transformation of America's treatment of its children and its youth. They will regard the American public school, as it was perfected by the end of the twentieth century, not only as one of the finest products of democracy, but as continuing insurance for the preservation of the vitality of a society of free men.

James Conant<sup>1</sup>

In 1979 Ed Meade<sup>2</sup> of the Ford Foundation was remarking how prophetic and true were Conant's perceptions about American public schools. A mere eight years later, however, people getting information exclusively from the media might think that teachers, cowering under a storm of public dissatisfaction with American schooling, are responding to major reforms sweeping across their districts.

What happened to cause the sea of change in public opinion? In McREL's region, the teachers we talk to are interested in improvement, concerned about preparing students for the twenty-first century, and willing to look at changes on the horizon—but they do not seem to feel things are all that bad.

Where does the interest in reform come from? Where is it going? Who will be teachers? For how long? How will they be prepared? What will they be allowed to do? Who will say how well they are doing? How will they be rewarded? And most important to Noteworthy readers, how can people with the most experience and wisdom about teaching—the real teachers—contribute to the debate?

The first step towards contributing to the discussion swirling around teaching is to be informed. This discussion is being framed by three major documents: the report of the Carnegie Task Force on Teaching as a Profession, A Nation Prepared: Teachers for the 21st Century; Tomorrow's Teachers: A Report of the Holmes Group; and Time for Results, The Governor's 1991 Report on Education.

Teaching reforms supported by individual governors are taking place state-by-state. We will report on McREL's region at another time. The Holmes Group concentrates on restructuring, and will be covered in a future issue of

Noteworthy. This article is about the Carnegie report, because its recommendations are being implemented most rapidly and because now is the optimal time for teacher input.

Teachers need to know what is being proposed, and by whom. Only then can they contribute to the debate the experience they have acquired through years of service in the classroom. But first, a bit of background may be helpful to account for the shift from Conant's and Meade's optimistic view that schools were well on their way to being "perfected" to the "rising tide of mediocrity" discovered a scant four years later in The Nation at Risk. What happened in those four years to so dramatically change the climate?

*"...Excellent schooling requires excellent teachers and principals. Excellent people have self-confidence and self-esteem and expect reasonable autonomy. Therefore, if we want excellent schools, we must give more power to the teachers and principals."*

- Horace's Compromise, Theodore Sizer, 1984.

The elections of 1980 signaled a change. Prior to 1980 and beginning with Eisenhower (whom both parties had approached to run as their candidate), presidential candidates were more similar than they were different in their vision of the potential and needs of America's schools. Each candidate had an obligatory education plank in his platform that spoke, in general rhetorical terms, of the importance and promise of education. The Left usually proposed more federal funding while the Right reaffirmed the necessity for local control. It is important to remember that the assumption, on both sides of the political spectrum, was that schools were generally OK.

This overall positive view was not shared by Carter and Reagan, however. Carter was closely identified with the status quo in education, which included significant federal funding and the inherent pull of federal control. Federal control was, of course, an anathema to Reagan. He made clear, shortly after he was inaugurated, that he was not sure there was any legitimate federal function in education. Technically he was right. Education is not specifically mentioned in the Constitution. This view also fit conveniently with two larger goals of Reagan's ad-

ministration: reducing taxes and "defunding the Left." Both these goals could be accomplished if education were a problem for state and local governments, and the federal role were one of supplying rhetoric and symbols from the "bully pulpit." William Lowe Boyd points out, "With very little more than effective use of rhetoric and symbols, and the ability to command attention from the media, [Reagan and his secretaries of Education, Bell and Bennett] have reshaped the semantics and agenda of American educational policy."<sup>3</sup>

The first step was taken in The Nation at Risk. Using powerful language, it was claimed that if an unfriendly nation had imposed our educational system upon us it would have been seen as "an act of war." This assertion captured the attention of the media and shifted the terms of the debate to economics. The suffering economy and balance of trade were linked to the poor "product" the schools were "manufacturing." Education was no longer seen merely as a path to personal economic gain. It was essential to the viability of the nation. State governors, particularly in the southern states where public education has traditionally been poorest (and public schools most heavily minority), noted the connection between improved schooling and improving the state's economy. They made the Nation at Risk agenda their own, thus beginning the state level reforms called the "second wave." Influential educators representing other political points of view countered the Nation at Risk with Children at Risk. This restates a widespread concern for the disadvantaged and disenfranchised among the nation's students and tries to enlarge the reform agenda to include equity as well as excellence criteria. Instead of using purely economic arguments, it reintroduces a broader discussion of the purposes of schooling—purposes more closely matching Conant's vision cited earlier. Still, this position was less successful at capturing media attention for a number of reasons including its complexity, its abstract appeal to justice rather than to pocketbooks, and its subtlety as a campaign issue.

*"The most fundamental requirement for a democracy is an educated citizenry capable of informed judgment on public issues. Participation in self-governance will require a higher standard of scientific literacy, a deeper understanding of history, and a greater capacity to think critically."*

- Who Will Teach Our Children? A Strategy for Improving California's Schools, *The Report of the California Commission on the Teaching Profession*, 1985.

Rhetoric and symbols will not, by themselves, bring about substantive reform of systems nor will they change the behavior of individuals. Nonfederal actors began to

take a more substantive approach to reform. At the forefront of what is being called the "second wave" of reform are efforts by the Carnegie Forum on Education and the Economy, the Holmes Group, and the National Governors' Association. Each began with a commission and position paper. McREL's series of reports to the teachers of this region begins with A Nation Prepared: Teachers for the 21st Century.

A Nation Prepared: Teachers for the 21st Century, referred to, heretofore, as the Carnegie Report, was sponsored by the Carnegie Forum on Education and the Economy. It is the most readable of the three documents, clearly and cleverly designed, with snappy quotes in the margins and lots of examples and illustrations that provoke thought and stimulate conversation. This analysis is, however, primarily economic—predictable, considering its source. While the authors describe the requirements of democracy as "a self-governing citizenry, with a shared cultural and intellectual heritage bound together in a commonwealth and capable of informed judgments," this view occupies no more than a simple paragraph early in the document. The economic perspective is summed up in the introduction:

Our argument, then, is simple. If our standard of living is to be maintained, if the growth of a permanent underclass is to be averted, if democracy is to function effectively into the next century, our schools must graduate the vast majority of their students with achievement levels long thought possible only for the privileged few.

This is accomplished through shifting the focus of schooling from, "teaching to learning, from the passive acquisition of facts and routines to the active application of ideas to problems. That transition makes the role of the teacher more important, not less."

We are describing people of substantial intellectual accomplishment. More than that, they are people who can communicate what they know to others, stimulate students to strive toward the same levels of accomplishment, and create environments in which young people not only get a taste for learning but build a base upon which they will continue to learn and apply what they know to the lives they go on to lead.<sup>4</sup>

These people will emerge as a result of the fundamental change proposed by the Carnegie report: the evolution of teaching from an occupation to a profession. The following events are necessary for that shift to take place.

- (1) Standards for entering teachers are raised. Teachers must be among the best educated people in their community.
- (2) Highly skilled teachers are recruited and retained. The schools must offer pay and conditions of work competitive with those of other professionals. That means a fundamental

change in schools and in the profession of teaching.

(3) The structure of the teaching workforce and of schools is changed. Professionals are a valuable resource. They are supported by people and equipment, making the most efficient use of their time. (Teachers currently spend 10-50% of their time on non-instructional tasks. Professionals are usually organized so that the most able among them influence the work others do. Highly skilled and experienced teachers are typically used no differently than the novice.) Education, like other professions, will have to structure itself to make the very best use of a distribution of talent.

The Carnegie Plan proposed the following key elements:

- Create a national board for professional teaching standards, organized with a regional and state membership structure, to establish high standards for what teachers need to know and be able to do, and to certify teachers who meet the standard.
- Restructure schools to provide a professional environment for teachers, freeing them to decide how best to meet state and local goals for children while holding them accountable for student progress.
- Restructure the teaching force, and introduce a new category of LEAD teachers with the proven ability to provide active leadership in the redesign of the schools and to help their colleagues uphold high standards of learning and teaching.
- Require a bachelors degree in the arts and sciences as a prerequisite for the professional study of teaching.
- Mobilize the nation's resources to prepare minority youngsters for teaching careers.
- Relate incentives for teachers to school-wide performance and provide schools with the technology, services and staff essential to teacher productivity.
- Make teachers' salaries and career opportunities competitive with those in other professions.

The report cautions that policymakers will be tempted to implement only those features of the plan that cost little in the way of organizational trauma or dollars, but that this would defeat the purpose. "It is the entire structure that needs an overhaul, not just a few components. None (of the strategies) will succeed unless all are implemented."

The final section of the paper is "Implementing the Plan." As you would expect from a document based on an economic model, costs are the first topic.

To bring about implementation, the public must be convinced that the returns on this new investment in education will be tangible and that the policy changes advocated will set the stage (1) for major long-term improvement of America's competitive position in world mar-

kets; (2) for wider participation in an expanding economy across the social spectrum; and (3) for a better educated citizenry, capable of preserving democracy well into the 21st century. The incremental cost of the reform must be weighed in relation to the cost of inaction and the returns in productivity.

*"In past efforts to reform education, the role of the teacher has been overlooked. The teacher is key to education reform. If teachers don't believe in it, it won't work. They need more control over curriculum"*

- Fred Hechinger, president, New York Times Foundation, *The Boston Sunday Globe*, April 26, 1987.

The professionalization of the workforce is the key to reorienting policy to enhance teacher productivity and to lower the cost of attracting more capable people to the classroom. Resources must be shifted from administrative overhead to instruction. Other savings will come from compressing the total time spent in formal education before young adults enter the workforce and by significantly extending the average life of a teaching career. An expanding economy (the result of a better "product" emerging from the schools) will support increased educational spending, if education maintains its current share of the GNP. Finally, if the current maldistribution of teaching talent is not to be made worse, equalization formulas need to allocate resources to districts based on three criteria: the district's tax base; the composition of the district's student population; and local wage rates. The report suggests that the Federal Government's role should be to "level the playing field" by adapting a model of general purpose equalization grants to insure that jurisdictions with a weak revenue base have adequate resources to provide essential public services—in this case, board-certified teachers.

Board certification is the mechanism by which Carnegie will move teaching from an occupation to a profession. Since the report was issued in May, 1986, a 33-member planning group has been convened to determine the composition of the Board. Because the Board will eventually determine who may enter the profession, how teachers will be trained, their ethical code of behavior, and their status as viewed by the public at large, those chosen to sit on the Board will wield substantial power. Decisions must be made about:

- (1) the Board's composition;
- (2) how much say teachers will have in selecting Board members;
- (3) what influence the unions and other organizations within the educational community will have over the Board's future direction;
- (4) to what extent the Board will represent the ethnic and cultural diversity of the Nation's schools.

The Carnegie Task Force envisions the Board as an organization run by teachers for teachers. Proposals for Board composition range from 51 to 66 percent teachers, elected in the long run by Board-certified teachers. The NEA agrees with the concept of a majority of teachers, but is proposing that all teachers who sit on the Board be selected by their unions, and that slots be allocated based on the size of the two national unions. Eighty-five percent of teachers in the country belong to either NEA or AFT. NEA says that since its membership is four times as large as AFT's, it "would have to look hard" at equal union representation. A second, related quandary is whether people who sit on the Board do so as individuals or as representatives of specific interest groups.

A third issue is the role of teacher educators on the Board. Planners also must resolve ethnic, gender and geographical representation issues and decide whether there will be slots reserved and/or guaranteed for minorities, women, men, and regions of the country. The Board itself, however, will decide who is eligible for their exams.

Planning group members are trying to resolve such issues by the end of the summer, when they hope to have the initial roster of members, articles and by-laws for the Board. The group does not feel strictly bound to a summer deadline, however. Marc Tucker, Executive Director of the Carnegie Forum says, "Our pledge ... is to move as rapidly as possible, consistent with making good judgments. Getting it done right is the most important thing."

*"It is traditional wisdom in the business world that a corporation is only as good as the people it employs. Similarly, our schools can be no better than the teachers who staff them."*

- Investing In Our Children: Business and the Public Schools, Committee for Economic Development, 1985.

What can teachers in McREL's region do to influence these deliberations and enter the wider debate on teaching in America? Write your professional associations. Write or call policy leaders in your state. Follow the progress of the planning group and the national board to certify teachers, for you can be sure that the Board will eventually turn its attention to issues of recertification that will affect you directly. Remember, certification, in this case, does not mean merely those people entering the profession; it also means practicing teachers. Talk about these ideas with your colleagues and others in your community. Note that the National Governor's Association in Washington is awarding grants to schools, districts and states for projects centered around recommendations of the Carnegie Forum. Participate in local efforts to strengthen school programs. Remind yourself of your vision when you became a teacher and think about why you continue to teach. Each morning, as you begin the day, remind your-

self of the kind of teacher you wish to become and work toward that vision.

*"If teachers talked more with each other about both education and students, the chances for productive exchange about the effects of their efforts on students would increase. They could begin to discuss curriculum in its proper context: what students should know and be able to do at the end of high school....It is more important to organize school time so that such conversations can occur, than to impose an ideal curriculum on schools from the outside....rearranging school time in this manner empowers teachers by placing them in the center of educational decision-making rather than on the periphery..."*

- The Shopping Mall High School: Winners and Losers in the Educational Marketplace, Arthur G. Powell, Eleanor Farrar and David K. Cohen, 1985.

For copies of A Nation Prepared: Teachers for the 21st Century, write:

Carnegie Forum on Education and The Economy  
P.O. Box 157  
Hyattsville, MD 20781  
1-10      \$9.95 each postpaid  
11-25     8.95 each postpaid  
26+      6.95 each postpaid

#### References

<sup>1</sup>Conant, J. B. The Child, The Parent, and The State. Harvard University Press, 1959.

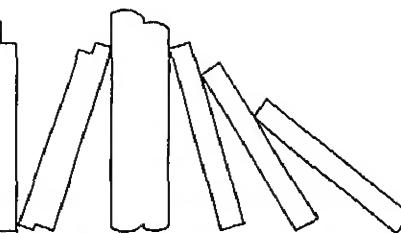
<sup>2</sup>Meade, E. J., Jr. "Philanthropy and Public Schools: One Foundation's Evolving Perspective." In Private Philanthropy and Public Elementary and Secondary Education, G. Benjamin, Ed. NY: Rockefeller Archive Center Publication, 1980.

<sup>3</sup>Boyd, W. L. "Rhetoric and Symbolic Politics: President Reagan's School Reform Agenda." Commentary in Education Week, Vol. VI, #25, March 18, 1987.

<sup>4</sup>A Nation Prepared: Teachers for the 21st Century. A Report of the Task Force on Teaching as a Profession. Carnegie Forum on Education and the Economy, 1986.

# CREASING YOUR OPTIONS: MODELS OF INSTRUCTION

C. L. Hutchins



Teaching is among the most important professions in country. In fact, from McREL's point of view teaching is the "noblest profession"—even though this phrase has become a cliche and, in some ways, sounds cynical. Teachers salaries do not accord with that status. In reservations aside, however, no one can doubt that teachers have broad, long-lasting impact on the lives of nation's youth.

Partly because teaching affects so many facets of personal development, the profession historically has been thought of as an art rather than a science or technology. Over the past few decades, however, more attention has been devoted to systematizing what teachers do. The notion that there is a science of teaching has gained support from recent research on teacher behavior. In fact, many people now agree that teaching is a profession analogous to medicine.

Examples of this scientific approach to teaching are several specific models for instruction which have been developed and evaluated. The best known models accompany this overview.

The McREL staff has synthesized the primary characteristics of these models into a single model. The elements of this model are:

**Planning**—Includes taking into account the assessment of the students' current proficiencies and defining what specific knowledge or skill should be taught, what methods and resources used, at what rate they should be taught, and to what level of mastery.

**Teaching**—Involves such steps as:

*Statement of purpose*, includes communicating the purpose to the students, and securing their interest.

*Lesson presentation*, includes demonstrations, modeling, laying out alternative strategies for accomplishing the task, and checking for understanding.

*Guided practice*, includes specific, individualized feedback.

*Independent practice*, is a time to build speed and accuracy and includes "massed" and "spaced" experiences.

**Assessment and Review**—Involves checking progress; reteaching, if necessary, using a different strategy and resources; and providing appropriate acknowledgements and rewards. Review can be incor-

porated into the next cycle of instruction on related material.

Despite these common features, however, there are notable differences in the models such as:

- the precision with which the teachers are expected to apply the model.
- the degree of student control over the situation.
- the degree to which student response is expected to be uniform, the amount of individualization possible.
- the assumptions made about student learning.

Research suggests that these differences are important and that, therefore, no single model will work best in all situations. When the child is taken into account as well as the specific learning objective and the style of the teacher—when all these factors are considered—one model may work better than another. As a result, now and for some time to come, teaching, just as other professions, will continue to resemble an art as much as a science requiring the judgment of the teacher to adapt the general characteristics of a model to a particular situation.

The teacher's role in decision-making of the kind suggested above recently has come under scrutiny. Dave Berliner, for example, talks and writes about the "teacher as an executive," someone who daily makes more decisions of greater importance to the lives of others than some chief executive officers make in an entire month or year. This conclusion has caused Berliner to study how teachers make so many decisions. His conclusion—expert teachers tend to manage by routine. Over a period of time they transform patterns of activities into smooth routines that require no conscious thought. In other words, the expert teacher functions like the expert pianist; coordination of mind and fingers is so automatic that the musician, unlike the beginner, does not think about individual chords or notes. Instead, both the expert musician and the expert teacher tend to focus on whole patterns, making decisions only by way of exception—when the patterns they come to expect are interrupted or missing.

If this portrayal of an expert teacher is correct, then we must view teaching models as building blocks, part of the teacher's repertoire, to be selected and adapted as conditions require. And, if this is correct, those who evaluate teachers must avoid mechanistic approaches when judging the effectiveness of an experienced teacher. Detailed, step-by-step observation of the implementation

of a particular model may be appropriate for judging inexperienced teachers or teachers learning the model for the first time. But as teachers mature, as they are consciously able to choose among models and adapt and modify them to the needs of individual students, a much broader perspective must be taken in evaluation.

The teacher's need to make complex decisions is reflected in Madeline Hunter's defense of her own model of teaching. This model has been criticized for being mechanistic, demanding little thought or decision-making. While this may be true of many applications of the Hunter model, especially those used to develop rigid evaluation models of teaching, Hunter herself has always seen the model as a framework for decision-making, not as a multi-step model of teaching (*Educational Leadership*, February, 1987).

It is important to view the models presented here as frameworks. They require teachers to make thoughtful decisions regarding their selection and use. Supporting this position are two concluding points.

First, the trend to mechanistic models of teaching seems to have been accompanied by a subtle shift in the responsibility for learning from the student to the teacher. As teaching becomes more and more a matter of "step 1, step 2, step 3, etc.", the instructor becomes more and more controlling in the learning situation. The practice of using models tends to degenerate easily into saying, in effect, "Students, just follow my instructions and you will learn what I want you to learn." The teacher sets the goal, rather than the student, the teacher doles out the information rather than allowing the student to discover it; the teacher sets the pace, determines the measure of success, decides when the task is over, etc. This approach may be valuable when the task is cut and dried or in some daily, routine situations. But, if the student is not given the opportunity to be responsible, to take charge, to make mistakes, and to move toward a system that creates learner independence rather than learner dependence, the result will run counter to the broader purposes of education.

Although several of the models described address aspects of this issue, the "Learning to Learn" model of McREL's Thinking Skills Program, TACTICS, is the only one we know that is consciously designed to foster learner independence rather than learner dependence. It argues for teaching students how to set their own goals, monitor their own behavior, cope with failure, and persist.

The second point to be made about teaching, and placing it in a context broader than one of implementing a specific model, is that teaching is more than delivering instruction. Shirley McCune of McREL explains this by describing four components of teaching. In reading this list you will quickly see that most of the models described focus on component III, the delivery of instruction. They do not address the other elements. The four components follow.

I. Interpersonal Skills of Teaching—entering the learner's frame of reference, personalizing learning, and initiating action or application of learning. McCune argues that, in addition to the techniques involved in a specific instructional model, teachers need to be conscious of the emotional context they create with students through their interactions. The same instructional activities can be delivered in a way that supports student learning or in a way that is destructive of student learning. Hunter sometimes refers to this as "feeling tone."

II. Structuring and Organizing Content—developing the organization of content, skills outcomes, knowledge and skills objectives, and methods of learning. There are very few organized programs or models for dealing with this aspect of teaching. Curriculum alignment, mapping and curriculum development fall within this area, but most programs do not directly address the specific curriculum development and adaptation, issues that teachers face.

III. Delivering Instruction—using skills steps, a variety of methods, and following a sequence of instruction. This is the area that most models of instruction deal with, including most models described here.

IV. Classroom Management Skills—managing time and attention among students, providing a learning climate, and providing positive expectations for all students. There are, of course, many programs and strategies that fit into this area. Elsewhere in the Noteworthy series McREL has described such tactics as "Beginning the School Year," "Behavioral Modification" and others which incorporate classroom management strategies, etc.

Much can be learned from studying the following seven instructional models and noting (1) where they agree, i.e., what steps or approaches do all or most have in common (because, presumably, they are on to something!); and (2) how they approach instruction differently (because, it would seem, they each emphasize something unique).

Again, no one instructional model is appropriate for all children and for all instructional purposes!

An approach to translating this information from theory to practice is to develop an individual or school model. To facilitate this model development, the Expert Development Process and Critiquing the Instructional Model (following) can be used as a staff development activity.

## THE EXPERT DEVELOPMENT PROCESS

The Expert Development Process is intended to be used in an in-service setting, with an entire building staff. It is used to speed learning, and build on existing expertise among teachers and administrators. It develops collaboration, discussion and decision-making among staff and reinforces building-level collegiality and the role of the teacher as professional. The process is powerful in that it allows for a large amount of written information to be digested in a short amount of time.

For use with the instructional models which follow, have copies of the model for each member of the expert group studying a particular model. Proceed through the process by following the steps listed below.

1. Reflect on your attention level, goals and attitudes toward the task—in this case the task of learning about specific tactics for school improvement. Learning theory says that if there are other matters diverting your attention, if you are unable to accept the learning goal, or if you do not view the activity as one likely to succeed, learning will not be successful. If the right conditions do not exist, discuss them before starting.
2. Participate in a team approach to studying the large amount of information contained in the reading materials.
  - a. Start by joining a "learning group" of seven people, organized around natural groupings such as department or grade level.
  - b. Agree that one person from each "learning group" will become an "expert" in each of the seven instructional models.
  - c. Meet in "expert groups" formed around each model. Be sure each participant has a copy of the model. Start by reading the materials and answering the questions listed on the "Expert Sheet," which follows.
  - d. Reconvene your learning group and share what has been learned.
  - e. Conclude with a consensus process in which the information that has been learned about each model is used to develop an instructional model unique to your school.
  - f. Use "Critiquing the Instructional Model" to evaluate the instructional model you have developed.
3. Establish an implementation process. Decide on a staff-development approach to support those who want to cooperate in implementing the model. McREL recommends the establishment of a peer-coaching process that pairs off staff members with one person working up a lesson demonstrating the model, and the second observing the process and providing feedback. The feedback focuses only on the use of the model.

---

---

## EXPERT WORKSHEET

- I. Read the material distributed and jot down short notes to answer the following questions:
  1. What ideas in the instructional model are most important or useful?
  2. What components of the model run counter to your professional experience?
  3. What additional ideas do you have or suggestions would you make? For example, do you know of other models that work better than this one? Do you have models you have tried that work? What are they?
  4. Would you try this model yourself? Would you recommend it to others?
- II. After everyone in the group has finished reading, discuss the questions above. Find out what the others think and suggest. Below, write the main points that the group agrees would be critical for others in your "learning group" to know. Explain these points to members of your "learning group."

## CRITIQUING THE INSTRUCTIONAL MODEL

"Basically, a model is a symbolic representation of the various aspects of a complex event or situation, and their interrelationships. A model is by nature a simplification and thus may or may not include all the variables. It should include, however, all of those variables which the model-builder considers important and, in this sense, models serve as an aid to understanding the event or situation being studied." (Lippitt, 1973)

You are to critique the instructional model being presented by assigning a number from 1 to 5 (1 is lowest and 5 is highest) to each of the following functions of the model.

1. REPRESENTATION—Does this instructional model represent the complex activities of instruction and show the relationships between the activities?  
Comments
2. INTERPRETATION—Does this instructional model interpret components of the seven instructional models and establish a framework for staff discussion and experimentation?  
Comments
3. VISUALIZATION—Does this model visualize the instructional process well enough so that it can be used as a coaching process for staff members?  
Comments
4. COMMUNICATION—Is the message of the model clear and readily understandable?  
Does it convey the message intended?  
Comments

---

\_\_\_\_\_ 5. INTERPERSONAL SKILLS—Does this model support the development of positive, affectively empowering Interpersonal Interactions between teachers and students and between students and others?  
Comments

\_\_\_\_\_ 6. STRUCTURING AND ORGANIZING CONTENT—Does this instructional model develop the organization of content, skills, outcomes, knowledge and skills objectives, and methods of learning?  
Comments

\_\_\_\_\_ 7. DELIVERING INSTRUCTION—Does the model use skills steps, a variety of methods and follow a sequence of instruction?  
Comments

\_\_\_\_\_ 8. CLASSROOM MANAGEMENT SKILLS—Does this instructional model develop the management of time and attention among students and provide for a learning climate and positive expectations for all students?  
Comments

---

## LEARNING-TO-LEARN

An instructional model developed by Robert Marzano.

Learning-to-learn skills improve student efficiency at academic and non-academic tasks. As the name suggests, they are skills which form a "backdrop" for learning—be it learning something academic or something non-academic. In other words, there are things people do to be successful at any task.

As defined by Robert Marzano in his thinking skills program TACTICS, there are four general components of learning-to-learn: attending, goal setting, monitoring attitudes, and self-evaluating.

### ATTENDING

When teachers stress the importance of attending in a classroom, it usually sounds something like "Pay attention!" This behavior signals students to attend. It does not teach them how to attend. To teach them to attend you must provide them with a method for attending. Such a method includes the following instructions:

1. Be aware of your level of attention at a given moment.
2. Be aware of the level of attention required for the task at hand.
3. Compare your level of attention with that required for the task.
4. Adjust your level of attention if necessary.

Before students can use this method, they must learn two other basic skills: *energy control* and *bracketing*.

*Energy control* is being able to raise and lower energy levels at will. A major part of what we call attending is raising your energy level. People do this in different ways. For example, some people sit up straight and open their eyes wide. Others take a deep breath and relax their shoulders. Students should be helped to recognize what they do to raise their energy level. Then, when they want energy, they can take those physical steps. The other side of the coin is that students should be shown what to do to lower their energy level—to relax.

The other skill necessary to control attention is *bracketing*, that is to consciously choose not to think about something, to "put it on the back burner" and think about it later. In a classroom situation bracketing can be used to set aside thoughts that are unrelated to the topic of instruction. For example, a student in a reading class might be thinking about the quiz in the upcoming math class. Although the math quiz is important, thinking about it during reading does little to help reading or math. Hence the student should bracket or consciously put aside

thoughts about the math quiz and return to them after the reading lesson.

Once students are aware of the benefits of attending, they can use the attention control method. Initially this will be teacher directed. Over time students themselves should initiate attention control. They might find it useful when they are tired or in a situation that does not intrinsically interest them.

### SETTING GOALS

Over forty years ago Sears found that successful students tend to set explicit goals. More recently Brophy found that successful students set increasingly difficult goals. That is, they use goal setting to challenge themselves.

A review of current goal setting programs gives some general steps.

#### Step 1. Start with short term goals.

Most people find it difficult, especially in the beginning, to commit to long term goals. It is better to begin with short term goals or, if you have a long term goal, to break it down into a series of short term goals.

#### Step 2. Make your goals concrete.

The most practical goals appear to be the most concrete. Some goals are already concrete (e.g., "I want \$1,000"). Fortunately, most abstract goals can be turned into concrete goals with a little bit of thought. For example, "Having more fun at home" can become "Laughing with my family at least once per night."

#### Step 3. Allow yourself to fail.

Sometimes a goal is not accomplished. Other times a goal is changed. This is appropriate. Goals are tools to help, not rules that constrain. If a goal is no longer valid, it should be changed or dropped.

Once a student grasps the basics of goal setting, introduce the following process:

1. State your goal in written form.
2. Identify a time frame to accomplish your goal.
3. Imagine yourself accomplishing the goal.
4. Identify the steps to accomplish the goal.
5. Occasionally review the goal to see if it, or the steps needed to accomplish it, should be changed.

### MONITORING ATTITUDES

More and more psychologists are verifying that attitudes affect behavior. For example, you can control your attention and set explicit goals, but, if you approach a task

with negative attitudes, chances of success are slim. This implies that students should be encouraged to monitor attitudes about themselves and school and to change negative attitudes into positive ones. This can be done indirectly by providing students with models demonstrating positive attitudes toward behavior. For example, Craste (1985) found that fifth and sixth graders could be taught that "effort pays off" simply by observing role models who are rewarded for effort.

A more direct way to change attitudes is "cognitive restructuring." Cognitive restructuring refers to a variety of techniques to change an individual's self-statements, as well as the premises, assumptions and beliefs underlying them. Affirmations are one of the most common tools used in cognitive restructuring. An affirmation is simply an overt statement to reinforce a particular attitude the individual wishes to acquire.

But what are the attitudes closely related to success? Here are three of the most powerful:

1. Self-worth is not tied to success or failure at the task.

One of the more interesting findings of research on attributions is that human beings generally strive to create and maintain a sense of competency (Epstein, 1973). If we believe that failure at a given task is an indication of incompetence, then we consider the task a risk to our self-worth. Failure will mean we are not competent. One way to protect our self-worth when engaging in a difficult task is to put very little effort into it. If we don't try too hard and fail, we, at least, have an excuse and our self-worth stays intact. We can reason that failure was due to lack of effort not competency.

Covington states that this dilemma creates a double bind for students. Since only a few students can receive high grades or high scores on a standardized test, success is limited. Coupled with this is a school culture requiring effort from students—teachers simply will not tolerate lack of effort. Consequently, for most students, school poses a tremendous threat to self-worth because:

- Students equate failure in school with lack of competence;
- There are limited rewards so the probability of failure is high;
- Lack of effort is not tolerated.

There is a way out of this dilemma. Nicholls suggests that teachers encourage "task motivation" rather than ego or extrinsic motivation. In other words, teachers should encourage doing a task to "find out how to do something" or "see how something works" rather than to "look good" (ego motivation) or to please someone else (extrinsic motivation). Research indicates that when classroom emphasis is placed on understanding a task and learning from it ("let's see what you can learn here") rather than performing well ("let's see how well you do") students are naturally drawn to more difficult tasks and attain a sense of satisfaction even if not highly successful.

2. The task can be performed

According to research on locus of control and self-determination, a sense of personal control over the outcome is central to how efficiently a student approaches a task. For example, motivation and performance are determined by the extent to which a student believes the task can be performed. That is, if a student feels success is the result of something outside of him/herself, the student will have little or no motivation to do it.

3. Sustained effort will pay off.

Welner (1983) found that individuals commonly attribute success to one of four things: 1) ability or competence, 2) effort, 3) other people, or 4) luck. In other words, if a person is successful at something she/he will think this success is due to the fact that:

1. she/he had the ability to accomplish the task;
2. she/he put the energy into completing the task;
3. she/he had the right help from other people; or
4. she/he was lucky.

A useful question for educational purposes is "which of these four is most useful to sustain motivation?" Certainly "luck" and "other people" are not very useful. What happens when you run out of luck or are alone? At first glance it might appear that ability would be the most useful—if I think I have "the right stuff" I can do anything. Unfortunately, the ability attribution will frequently backfire. Regardless of ability, you inevitably encounter tasks for which you are not skilled. In such instances you will probably not even attempt the task, or you do so halfheartedly, because you know you do not possess the necessary talent.

The most useful among the four is "effort"—the belief that intense, extended effort will generally lead to success. Apparently this attitude can be highly generalized. Individuals who view effort as the key to success can apply that attitude to almost all situations. In their study of excellence in the private sector, Peters and Waterman found that many of the top corporate executives interviewed attributed success to effort. They believe persistent effort can overcome almost any obstacle.

## SELF-EVALUATING

Effective learners check on what works and what does not work towards achieving a goal. When goals are long term, they set "milestones"—small goals on the way to the larger goal. These milestones represent "checkpoints" along the way.

Another useful self-evaluation technique is action planning. A simplified version might go like this:

- Step 1. Identify actions to accomplish the goal.
- Step 2. Prioritize those actions.
- Step 3. Keep moving through your list of prioritized actions doing what you can to achieve them.
- Step 4. Periodically pause and reassess your action plan.

Have any of the actions you listed become irrelevant to your goal? Cross these off your list. Are any other actions, which you have not listed, important to the accomplishment of your goal? Add them to your list.

These steps are fairly concrete. However, self-evaluation can be quite difficult if goals and tasks are primarily cognitive. That is, for goals which require complex mental operations, there is often very little external evidence to indicate how the task is progressing. To overcome this difficulty with mental tasks, students can be asked to "think aloud" as they work.

Thinking aloud, as a self-evaluation technique, has been used successfully in mathematics and science-related tasks as well as with language arts and related cognitive tasks. In the "paired problem solving approach" students are encouraged to work in pairs. One student acts as listener; the other as the "doer." The listener has two major tasks: 1) to demand constant vocalization from the doer, and 2) to constantly check the accuracy of the doer. After students receive practice as either listener or doer, they switch roles. Over time the process of monitoring progress becomes second nature. The student no longer needs the aid of a "listener."

### THE ACTIVITY FRAMEWORK

The four generalized learning-to-learn skills can be presented to students in isolation or they can be combined into an "activity framework" (see below).

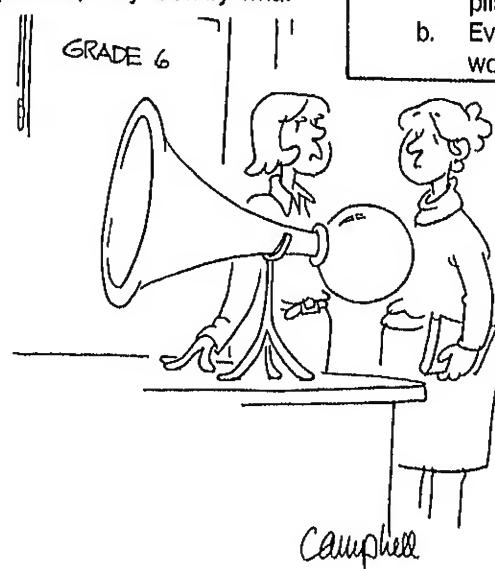
The activity framework is intended as a "casing" or context for all content area instruction. For example, classes can begin with parts 1-4. Parts 1-3 need take only a few minutes at the beginning of class. Part 4 can also be quite short or it can be extended. During part 5 students and teacher engage in standard content area activities.

Finally, class ends with part 6. Here students and teachers review their progress to see if they have accomplished stated goals. If so, they identify what worked best. If goals were not accomplished, they identify what did not work.

Over time, the activity framework becomes something students can use in all activities—in and out of school. According to current research and theory, such a practice will make them more powerful, independent and successful learners.

#### THE ACTIVITY FRAMEWORK

1. **REFOCUSING PHASE:**  
End your previous activity and relax.
2. **AWARENESS PHASE:**
  - a. Check your level of distraction. How much are you attending?
  - b. Take a look at your attitude toward the class. Do you believe the class is valuable?
  - c. What is your attitude toward working. Are you committed to being involved?
  - d. Check your attitude about your ability. Do you have a sense of power about your ability to perform well?
3. **RESPONSIBILITY PHASE:**
  - a. Hold-off or "bracket" any thoughts unrelated to assigned class work.
  - b. Generate interest for and give value to the assigned class work.
  - c. Commit yourself to becoming involved and exerting the necessary effort.
  - d. Resolve that you can do well.
4. **GOAL SETTING PHASE:**
  - a. Set some specific goals for the class.
  - b. Integrate the teacher's goals with your own.
5. **TASK ENGAGEMENT PHASE:**
  - a. Check to see if you are getting closer to or further away from the goal.
6. **TASK COMPLETION PHASE:**
  - a. Check to see if your goals were accomplished.
  - b. Evaluate what worked and what did not work relative to your goal.



"First, you have to get their attention."

# ACTIVE MATHEMATICS TEACHING

An instructional model developed by Good, Grouws and Ebmeier.

Active Mathematics Teaching is a model of instruction for the whole class that emphasizes specific teacher behaviors and structured daily activities. A systematic study conducted by Good, Grouws, and Ebmeier found several consistent differences between effective and ineffective mathematics teachers. Based on this study, a model called "Active Teaching," which incorporates the practices of the effective teachers during the mid-1970's and early 80's, was developed. Good found that children learned more when his model was implemented. The Active Mathematics Teaching model has now been implemented by many school districts throughout the country.

In the classroom, "active teaching" means a high ratio of student-teacher interaction. Frequent questions and answers, feedback, and management strategies increase the amount of time students spend on task.

The active teaching model postulates that no single activity produces the desired achievement goals. Only a combination of several behaviors, if implemented correctly, will produce the desired results. Good calls such a group of behaviors a "system of instruction." He defines "instruction" as the "kind of teaching that obligates the instructor to furnish the learner with lasting directions and is accountable for pupil performance" as measured by specific objectives (Good, 1983).

Active Mathematics Teaching consists of five timed activities performed within a 45-minute period.

## WEEKLY LESSON TIME TABLE

Follow the weekly lesson time table during the first three weeks of the month. On the last Monday, devote the entire period to a review of that month's lessons. Leave unchanged the activities for Tuesday through Friday of week four.

Active Mathematics Teaching improves student learning when all behaviors are systematically applied.

## Predevelopment

Begin the day's lesson with a brief review of the previous lesson. Collect homework and check it. *Mental computation*, without pencils or calculators, is an important predevelopment exercise. It helps students develop a quantitative sense, promotes flexible thinking and helps students detect absurd answers. Also, it provides a clue to how well a lesson is understood and serves as a bridge to new material.

## SUMMARY OF KEY INSTRUCTIONAL BEHAVIORS

### Daily Review (first 8 minutes except Mondays)

1. Review the concept and skills associated with the homework.
2. Collect and deal with homework assignments.
3. Ask several mental computation questions.

### Development (about 20 minutes)

1. Briefly focus on prerequisite skills and concepts.
2. Focus on meaning and promoting student understanding by using lively explanations, demonstrations, process explanations, illustrations, etc.
3. Assess student comprehension
  - a. Using process product questions (active interaction)
  - b. Using controlled practice.
4. Repeat and elaborate on the meaning portion, as necessary.

### Seatwork (about 15 minutes)

1. Provide uninterrupted, successful practice
2. Keep the ball rolling—get everyone involved, then sustain involvement.
3. Let students know their work will be checked at end of period (alerting).
4. Check the student's work (accountability).

### Homework Assignment (2 minutes maximum)

1. Assign homework on a regular basis at the end of each math class except Fridays.
2. Homework should involve about 15 minutes of work to be done at home.
3. Homework should include one or two review problems.

### Special Reviews

1. Weekly review/maintenance
  - a. Conduct a weekly review during the first 20 minutes each Monday.
  - b. Focus on skills and concepts covered during the previous week.
2. Monthly review/maintenance
  - a. Conduct a monthly review every fourth Monday.
  - b. Focus on skills and concepts covered since the last monthly review.

## Development

The development part of the lesson is more than a brief overview of new material. During this phase, the teacher builds a foundation for the material to be taught. General concepts, which place the new material in perspective with the "big picture," are presented first. With this groundwork the class is ready to learn specific lesson content. If this procedure is reversed, and mechanical learning and rules replace concepts, students won't understand what they're doing or why. Meaningless rules are soon forgotten. Errors and frustration increase.

Development starts with a short summary of the skills students need for the lesson. Then the teacher conducts an *active demonstration* of the concept idea or skill described in the lesson. The objective of active demonstration is student comprehension of learning goals. Activities can use manipulative materials to demonstrate processes and ideas. Common features can be abstracted from concrete examples. Making comparisons, searching for patterns, and class discussions all are techniques to reach the goal of student comprehension.

Following active demonstration, the teacher begins to assess *student comprehension*. This is done in two ways. The teacher asks brief oral questions requiring specific answers. (e.g.: "There are 60 minutes in an hour; how many minutes are there in a quarter-hour?") Once the correct answer is given, the teacher reemphasizes meaning by providing process explanations ("Yes, that's right, because . . .").

The second way to assess comprehension is to have students work practice problems. One problem should be worked at a time, followed by teacher assessment and explanation. Comprehension, not speed, is the object.

If assessment of student comprehension is deemed satisfactory, the teacher proceeds to the controlled practice phase. If not, the meaning portion of the lesson should be repeated.

Development leads to *controlled practice* which determines whether students are ready to go on to seatwork. During controlled practice, teachers should assign only one or two problems at a time. Students should not work longer than a minute before having their responses checked. The teacher frequently alerts the class that answers will be checked and to continue working, even when some students are at the board.

If performance remains poor, the development must be retaught. Moving prematurely to seatwork will only result in students practicing their errors. On the other hand, if most of the class understands the process and is ready for more independent work, it is pointless to go on with additional controlled practice.

## Seatwork

Seatwork is independently performed by the student at her/his desk. When students require minimal supervision and can answer problems relatively error free, they are ready for seatwork. Seatwork allows students to orga-

nize their understanding of concepts and to practice skills without interruption. Teachers should maintain the continuity of the lesson by making sure seatwork assignments are an extension of the development.

Though students are working on their own, this is not passive time. The teacher should not use the time to grade papers. Students should not work on other assignments or engage in chatter.

The teacher can maintain momentum by structuring the seatwork segment and holding students accountable for their work. Seatwork assignments should take no longer than 15 minutes, lest students get bored. The teacher should announce that answers will be checked at the end of the period. Throughout the seatwork phase the teacher monitors the students, providing feedback as needed. Care should be taken not to disrupt the activity by giving lengthy feedback to individuals or by making public announcements.

After an oral spot-check of answers, collect all seatwork assignments. There is no need to grade seatwork. However, it should be examined to see if students are using the time productively and successfully. Students should understand that success at seatwork will make homework easier.

## Homework

Homework should not be confused with seatwork. It is written work completed outside the classroom. Teachers should not allow students to finish homework during seatwork time as a reward or enticement to diligence. It is a distinct activity, following the pattern of progressively independent work.

There are sound reasons for homework. Research shows that many short practice periods produce results superior to those produced in large blocks of concentrated practice. Students master and retain new material better through multiple short practice sessions.

Homework is assigned at the end of the period, Monday through Thursday. The assignment should consist only of the types of problems students have mastered and should relate directly to the day's lessons. Homework should take the average student about 15 minutes. Thursday's assignment should be devoted primarily to a review of the week's work. The next day, at the beginning of the period, have students exchange papers for scoring; afterwards they can be collected and recorded by the teacher. Good recommends that homework count for at least 25 percent of each student's math grade.

If homework reveals serious problems, the entire sequence of the previous day's lesson should be retaught.

The value of homework is frequently undermined by teacher behaviors. Some teachers do this, indirectly, by not stressing the usefulness of the skills or, directly, by not collecting or grading assignments. If homework is assigned regularly and collected and graded consistently, students will respond with better work and improved attitudes.

## Review

It is normal to forget. Therefore, systematic review and maintenance are integral parts of each lesson.

Two types of review are described in the model. Each Monday the lesson begins with a review of material presented the previous week. Every fourth Monday is devoted entirely to a comprehensive review of lessons to date.

Review/maintenance sessions can include a variety of activities. The teacher may state definitions, properties, and generalizations, calling on the students to supply the correct term or name. Occasionally, these roles might be reversed. Teachers can stimulate interest by including games, contests or quiz show formats in the session.

Whatever activities are used, they should be developmental in nature. Developmental tasks focus on meaning and comprehension.

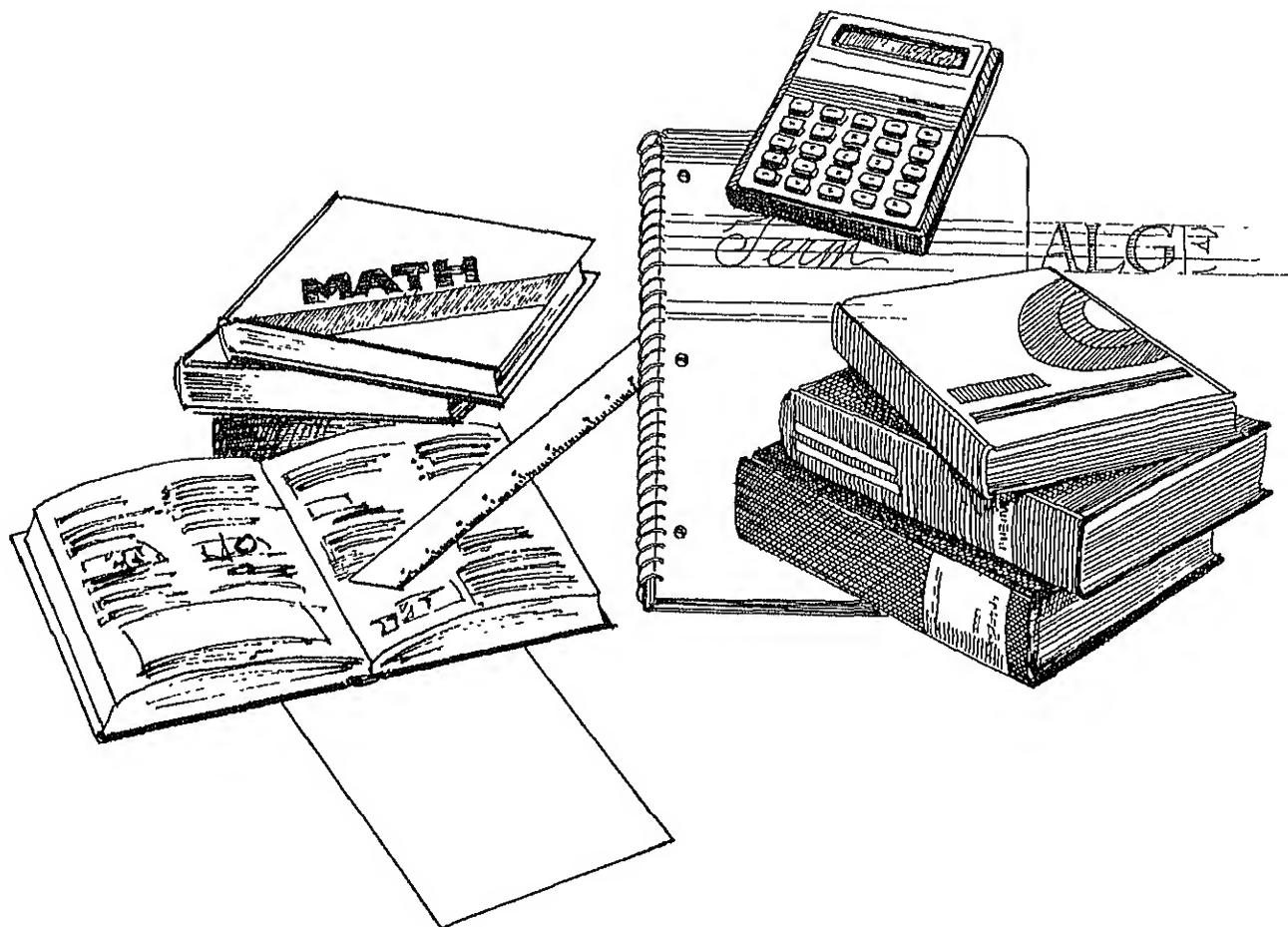
## RECOMMENDATIONS FROM AMT RESEARCH

Good's studies show that systematically following the program results in improved performance in both el-

ementary and secondary math classes. Circumstances will require occasional departures from the program, but these should be kept to a minimum.

While active mathematics teaching can accommodate different rates of instruction and learning, teachers should guard against extremes. If concepts are presented too rapidly, students won't retain the material. If teachers drag out the activities, students will become bored and time will be wasted. Also, teachers often tend to pack too many lessons into the final weeks of the semester.

The model emphasizes teaching mathematics to the class as a unit because the elements of the model (development, controlled practice, accountability, etc.) transfer better when implemented in a whole-class situation. Students in small groups or individual settings may learn less because they have less direct developmental work with the teacher. Also, moving from group to group takes time away from instruction. When differences among students in a class require some group work, Good recommends using no more than two groups.



## BEGINNING TEACHER EVALUATION STUDY (BTES)

An instructional model developed by Fisher, Berliner, Filby, Marlave, Cahen and Dishaw.

The BTES Instructional Model focuses on two measures of student learning: classroom behavior and test scores. Test scores are viewed as useful indicators of learning, but are not identified with learning itself. The model proposes that student behavior in the classroom is a more direct measure of learning. The BTES Model was designed for elementary reading and mathematics instruction but teachers can apply the model to a variety of cognitive and affective activities in the classroom.

The Beginning Teacher Evaluation Study (BTES) was a project of the California Commission for Teacher Preparation and Licensure. Its original goal was to evaluate teacher competencies and teacher education programs by observing recent graduates. In time, these goals changed. Emphasis on beginning teachers was dropped, but the BTES name was retained.

This model of instruction evolved from six years of research and fieldwork. The heart of the model is a concept called "academic learning time" (ALT). Because of this concept, the BTES Model is also known as the ALT Model.

### ACADEMIC LEARNING TIME

Academic learning time is a measure of student learning based on observable student behavior. It is defined as the amount of time a student spends on an academic task that she/he can perform with high success. The more ALT a student accumulates, the more the student is learning.

Equating academic learning time is not as simple as saying, "My second graders spent 20 minutes today on addition, therefore, their ALT for this subject was 20 minutes." In fact, some of this time might have been spent off task sharpening pencils, day-dreaming, socializing or having a low rate of success on tasks assigned.

The basic components of academic learning time are allocated time, student engagement and student high success.

*Allocated time* is the amount of classroom time spent on a specific subject. This time may be one continuous block or several segments. In reality, allocated time includes some serious study and some off-task activities or distractions.

*Engaged time* is a more refined measure of learning. It includes only the time the student pays attention to assigned tasks.

Fieldwork indicates that a greater rate of high success leads to increased achievement. *High success* refers to

situations in which the student demonstrates a good grasp of the task and makes only occasional mistakes. This finding does not imply that time be spent only in high success situations. Rather, lessons should contain a balance of high and medium success activities, weighted somewhat toward high success tasks. Low success activities are considered detrimental to learning.

The model recognizes the influence of student aptitude and classroom environment. The degree of enthusiasm, warmth, competitiveness, cooperation, and task orientation in a classroom affect academic learning time.

The amount of ALT can differ vastly from class to class. One study reported a range of from four to 52 minutes per day. Researchers calculated this broad range in the following manner. Let's say that 50 minutes of reading instruction per day is allocated to a student who pays attention about one-third of the time. One-fourth of the student's reading time is spent at a high level of success. This student will experience only about four minutes of engaged reading at a high success level. At the other extreme, if 100 minutes per day is allocated to reading for a student who is engaged 85 percent of the time at a high level of success for almost two-thirds of that time, then she/he will experience about 52 minutes of ALT per day.

Since learning takes place during academic learning time, students with low ALT require changes in their instructional programs.

### INSTRUCTIONAL FUNCTIONS

The BTES Model describes a five-part cycle of teaching functions that influence student learning. These interrelated functions include: *diagnosis, prescription, presentation, monitoring and feedback*.

The teacher begins with a *diagnosis* of the student's current knowledge, skill level, strengths and weaknesses. She/he can then *prescribe* instructional goals and activities, along with appropriate grouping and scheduling.

After this planning phase comes teacher-student interaction. It begins with a *presentation* of concepts. While the student works on tasks, the teacher *monitors* his/her responses to assure that the concept is understood. Information gained from *monitoring* might require giving the student *feedback* in the form of additional explanation. Or the teacher might need to cycle back to the diagnosis stage and begin the process anew.

Each of these functions can be fulfilled by a variety of behaviors depending on classroom organization, the curriculum and teacher preferences.

The research identifies effective teachers as those who skillfully use all five instructional functions. It was found that students learn more when teachers are accurate in predicting performance. Teachers diagnose more accurately when they know the subject matter and when they attend to differences among students.

In the prescription process, or deciding on what tasks the students will work, "appropriateness" is the major factor. "Appropriateness" of the instructional program refers to whether the program appears to match the needs of individual students. Appropriateness is related to success rate and achievement.

Students pay more attention, especially in mathematics, when they receive frequent planned presentations in a group setting. In both mathematics and reading, students make fewer errors when teachers spend more time structuring the lesson and giving directions. Students must know both the content of the lesson and what they are to do.

Teacher questions account for about one-third of the interactive instruction. The most common monitoring behavior observed was teacher questioning in a group setting. Students pay closer attention when involved in this type of activity. Effective teachers also monitor student work by circulating around the room during seatwork. Teachers rarely stop at a desk without making some comment or providing feedback.

Data indicates that academic feedback is more conducive to achievement than any other teaching behavior. Feedback should be provided as often as possible. Again, while there are many types of feedback, the question-answer exercise is the most common. Other methods are routine group meetings to check group assignments, oral homework, and oral reading circles. These activities focus student attention during class and hold students accountable for non-class work. Aides, volunteers, and peers also can be important sources of feedback.

#### THE LEARNING STUDENT

A profile of the learning student can be drawn from the model. The learning student experiences large amounts of academic learning time. This student spends relatively more time working on tasks designed to increase knowledge or skills. She/he is very attentive and is actively involved in the task at hand. The learning student is busy performing an academic task, not spending time on activities extraneous to learning. The student enjoys the activity and doesn't object to paying attention for long periods. The learning student spends considerable time practicing and reviewing skills. She/he has learned how to learn; that is, the student undertakes a new activity only after mastering a prerequisite one. She/he is rarely "thrown off track" by new material.

The learning student is not unhappy. There is no evidence to suggest that students become dissatisfied when the work load is relatively great so long as success is high. Students who work intensively don't acquire a distaste for

learning. In fact, successful students probably enjoy learning more because of their success.

A classroom full of learning students has specific characteristics. A model class is focused on cognitive learning. Students expect to work and are held accountable for doing so. The teacher cares about the students and wants to help them succeed. Teacher and students interact comfortably in a spirit of cooperation. Academic goals are clearly stated. There are frequently different types of reward systems in the classroom.

#### USING THE BTES MODEL

It should be kept in mind that the BTES Model is not a specific *method* of instruction. It is intended as a general framework for analyzing and describing the teaching-learning process. Any teaching activity, philosophy, method, or objective can be contained within this framework. Any student behavior can be analyzed and measured. While supporting data comes from elementary schools, secondary instruction would also benefit from application of this model.

The model serves many practical purposes. Teachers and education students can use it for systematic observation of classes. Teachers who learn to identify the learning student will find it easier to address individual needs during group sessions. When various methods are used, teachers can analyze the different ways in which the five teaching functions are fulfilled.

Academic learning time occurs simultaneously with instruction. Therefore, it provides an individual student variable for assessing the impact of instruction. The academic learning time for an individual student or the profile of academic learning time for an entire class can help a teacher decide what changes to make in instruction.

Awareness of instructional functions allows teachers to conceptualize their classroom behavior. They will be able to recognize the behavior that leads to or detracts from the goals of student attention and high student success.



## EXPLICIT TEACHING

An instructional model developed by Barak Rosenshine. Also known as Direct Teaching, Active Teaching, etc.

What is effective teaching? What sequences or patterns of instruction work for teaching well-structured, difficult sets of concepts and procedures or a curriculum that builds one set of knowledge or skills upon another. Specifically, how should instruction look when teaching mathematics procedures and computation; reading procedures; science and social studies concepts and facts; and skill development in areas such as map skills, for example.

After a decade of studying the research on effective teaching, Barak Rosenshine found that teachers who apply certain patterns to their teaching produce students who learn more rapidly and retain information longer. These patterns of instruction are sometimes called direct instruction or explicit teaching. What this means is that teachers are more effective when they:

- Structure learning
- Proceed in small steps but at a brisk pace
- Give detailed and redundant instructions and explanations
- Provide many examples
- Ask a large number of questions and provide overt, active practice
- Provide feedback and corrections, particularly in the initial stages of learning new material
- Encourage a student success rate of 80 percent or higher in initial learning
- Divide seatwork into smaller assignments
- Provide for frequent monitoring during seatwork
- Provide for continued independent practice so that students have a success rate of 90 to 100 percent and become quick at and confident about the material learned.

It is most important, when teaching young children and when introducing difficult material, skills or information that are prerequisites for later learning, that material be mastered to the point of overlearning. This is because the brain is limited in its ability to process new information (in most cases the limit is about seven points of information). In learning-to-learn terms, information must be limited, processed from short-term memory to long-term memory, and then reviewed and practiced until the skill or information is overlearned and becomes automatic. If these steps are not considered when teaching, the student's lim-

ited capacity (the brain) becomes overloaded and unable to focus and process new information. This is why new or difficult material should be taught in small steps and student success in initial learning, and later in independent practice, needs to be high.

Surprisingly, these patterns of instruction also work for older and for skilled learners. As part of an introductory physics course at Berkeley, Larkin and Reif (1976) developed a program to teach the skills of studying scientific texts. Experimental students read the material, answered questions, and received instruction when they made errors so that ultimately all students mastered the material. Later in the course, all students read new material on marketing and new material on gravitational force and answered questions on each passage. Students who received direct instruction in studying scientific texts performed better than the controls on each set of material. The researchers concluded:

Providing direct instruction in a general learning skill is a reliable way to help students become more independent learners. The results described here indicate that students do not automatically acquire a learning skill merely through experience in a subject matter. To enhance independent learning, learning skills should be taught directly. (Larkin and Reif, 1976)

Explicit teaching, then, is appropriate for students of different levels and for materials of different degrees of difficulty. A useful principle is to teach taking larger steps, proceeding at a more rapid pace and spending less time checking for understanding when teaching older, brighter students or when teaching material that is not too difficult.

Another area for adjustment is time spent on student practice. In the lower grades, particularly in reading and math, the amount of time spent on student practice (through teacher questions and student answers) will be considerable. In later grades, the time spent in presentation becomes longer and the teacher-directed practice becomes shorter.

## INSTRUCTIONAL FUNCTIONS

1. Daily review, checking previous day's work, and reteaching (if necessary).
  - Check homework and reteach areas in which there are student errors.
  - Review prerequisite skills and knowledge for today's lesson.

Some activities might include:

  - a. review concepts and skills necessary to do the homework
  - b. have students correct each other's papers
  - c. reteach or provide additional practice where necessary
  - d. teacher asks questions to check understanding
  - e. students reteach each other.
2. Present new content and/or skills
  - Provide overview (state goals and/or provide outline).
  - Proceed in small steps (if necessary), but at a rapid pace.
  - Teach and model procedures.
  - If necessary, give detailed or redundant instructions and explanations.
  - Provide both similar and dissimilar examples.
  - Phase in new skills while old skills are being mastered.
  - Check for understanding.

Some activities might include:

  - a. present material in small steps
  - b. focus on one thought (point, direction) at a time
  - c. avoid digressions
  - d. organize and present material so that one point is mastered before the next point is given
  - e. have many, varied, and specific examples
  - f. give detailed and redundant explanations for difficult points
  - g. check for student understanding on one point before proceeding to the next point
  - h. use questions to monitor student progress
  - i. stay with the topic, repeating material until students understand
3. Initial student practice
  - Engage in a high frequency of questions and overt student practice (from teacher and materials).
  - Give all students a chance to respond and receive feedback.
  - Teacher checks for understanding by evaluating student responses.
  - Continue practice until students have mastered the material.
4. Aim for a success rate of 80% or higher during initial learning.
4. Feedback and correctives (and recycling of instruction, if necessary)
  - Provide feedback to students, particularly when they are correct but hesitant.
  - Respond to student error; provide feedback and correctives and/or reteaching if necessary.
  - Give corrections by simplifying the question(s), giving clues, explaining or reviewing steps, or reteaching last steps.
  - Reteach using smaller steps when necessary.
5. Independent practice so that student responses are automatic
  - Assign seatwork.
  - Aim for utilization and automaticity (practice to overlearn).
  - Adopt procedures to insure student engagement during seatwork (i.e., teacher or aide monitoring).
  - Aim for a 95% correct response or higher.

Student engagement during seatwork is usually increased by the following:

  - a. Spend more time in lecture, discussion, and guided practice; that is, spend more time preparing the students for seatwork.
  - b. Structure seatwork to allow direct monitoring of students through the initial seatwork problems so they are practicing the material successfully.
  - c. Be sure that seatwork follows directly after the guided practice.
  - d. Be sure that the seatwork is directly relevant to the demonstrations and guided practice.
  - e. Circulate during seatwork, actively explaining, observing, asking questions, and giving feedback.
  - f. Have short contacts with individual students (i.e. 20 seconds or less).
  - g. For difficult material, have several segments of instruction and seatwork during a single period.
6. Set up weekly and monthly reviews
  - Reteach, if necessary.

In summary, Rosenshine has found:

- a) general patterns of effective instruction that are validated across grade level and subject areas
- b) an advantage to direct, explicit instruction -- even explicit instruction in becoming independent learners, and
- c) the importance of overlearning, particularly for hierarchically organized material.

### Teaching Functions

Rosenshine has combined the patterns of instruction found in the research on effective teaching into a list of six instructional "functions" as a guide for application:

1. Review, checking previous day's work (and reteaching, if necessary)
2. Present new content and/or skills
3. Initial student practice (and check for understanding)
4. Feedback and corrections (and reteaching, if necessary)
5. Independent student practice
6. Weekly and monthly reviews

There are no hard and fast rules in applying these six instructional "functions," and it is quite possible to make a reasonable list of four, six or eight functions. Rosenshine's list is meant to serve as a guide for discussing the general nature of effective instruction.

---

Rosenshine, B. V. "Synthesis of Research on Explicit Teaching."

Educational Leadership 43 (April 1986): 60-69.

Rosenshine, Barak. "Teaching Functions in Instructional Programs."

Arlie House Paper, 1982.



## THE 4MAT SYSTEM

An instructional model developed by Bernice McCarthy.

The 4Mat System is Bernice McCarthy's model for teaching based on learning styles. As a result of early brain research that found that the right and left sides of the brain serve different functions and process information differently, the idea of learning styles gained great popularity in the sixties and seventies. Learning styles are "characteristic penchants for perceiving and processing information and experience that are unique to individuals and developmental through life stages. They are comprised of complex interactions of physiological, psychological, environmental and situational variables." Put another way, this means people have preferred ways of looking at things and understanding them. These preferred ways can change over time. Ways of knowing, or styles of learning, come from an interaction of mind, body, surroundings and situations unique to each individual. McCarthy combined the major findings of learning style researchers with her observations from classrooms in Barrington, Illinois, and developed "The 4Mat System, A Cycle of Learning." The premises upon which 4Mat is based are:

- Human beings perceive experience and process information in different ways. Combinations formed by individual perceiving and processing techniques form unique learning styles.
- There are four major identifiable learning styles. All are equally valuable. Students need to be comfortable with their own unique learning style.
- Style One learners are primarily interested in personal meaning. Teachers need to give them a reason. Style Two learners are primarily interested in the facts. Teachers need to give them information. Style Three learners are primarily interested in how things work. Teachers need to let them work with things. Style Four learners are primarily interested in self-discovery. Teachers need to let them teach themselves and others.
- All students need to be taught in all four ways—to be comfortable and successful part of the time while, at the same time, being stretched to develop other learning abilities. Different students will "shine" at different places in the learning cycle, so all will get to learn from each other.
- The 4Mat System moves through the learning cycle in sequence, teaching in all four modes and incorporating the four combinations of characteristics. The sequence is a natural learning progression.
- Each of the four learning modes needs to be taught with both right and left brain processing techniques.

The right mode dominant students will be comfortable half of the time, and will learn to adapt the other half of the time. The left mode dominant students will be comfortable half of the time, and will learn to adapt the other half of the time.

- The development and integration of all four modes of learning and the development and integration of both right and left brain processing skills should be a major goal of education.
- Students will come to accept their strengths and learn to capitalize on them, while developing a healthy respect for the uniqueness of others. At the same time they will further their ability to learn in alternative modes without the pressure of "being wrong."
- The more comfortable human beings are with themselves the more freely they learn from others.

### THE LEARNING STYLES

- Style One—The Innovative Learners. Style One learners seek meaning, need to be involved, learn by listening and sharing ideas, perceive information concretely and process it reflectively, are interested in people and culture, are divergent thinkers, and function through social interaction. Their strength—they are idea people, innovative and imaginative. Their goals include involvement in important issues and bringing unity to diversity. Their favorite questions are, "Why?" and "Why Not?"
- Style Two—The Analytic Learners. Style Two learners seek facts, need to know what the experts think, learn by thinking through ideas, perceive information abstractly and process it reflectively, are less interested in people than in ideas or concepts, critique information and collect data. They enjoy traditional classrooms. Schools are designed for these learners. They function by adapting to experts. Their strength—they create concepts and models. Self-satisfaction and intellectual recognition are their goals. Their favorite question is "What?"
- Style Three—The Common Sense Learners. Style Three learners seek utility and need to know how things work. They learn by testing theories. They edit reality and perceive information abstractly. They use factual data to design concepts, need hands-on experience, enjoy solving problems, resent being given answers, restrict judgment to concrete things, want to know how things they are asked to do will help in "real life." They function through inferences drawn from sensory experience. Their strength—they are concerned with

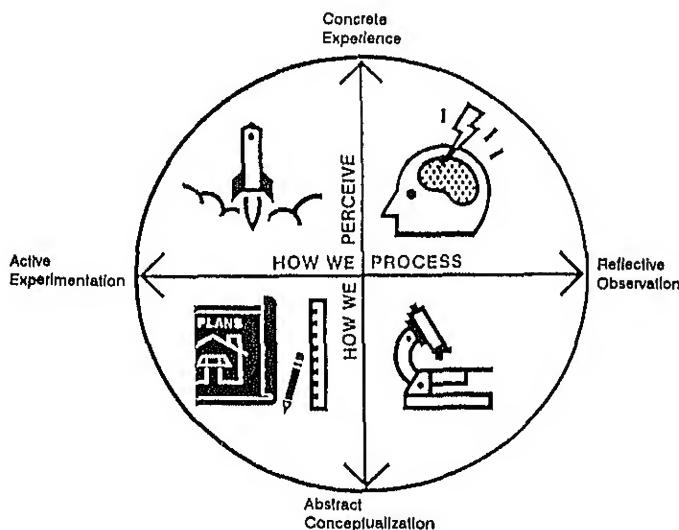
the practical application of ideas. Their goal is to bring their view of the present into line with future. Their favorite question is, "How does this work?"

- **Style Four—The Dynamic Learners.** Style Four learners seek hidden possibilities, need to know what can be done with things, learn by trial-and-error and self discovery. They perceive information concretely and process it actively, are adaptable to change and relish it; like variety and excel in situations calling for flexibility. They tend to take risks, are at ease with people but are sometimes seen as pushy. They often reach accurate conclusions in the absence of logic. Their strength—they act and carry out plans. Their goal is to make things happen. Their favorite question is, "What can this become?"

## LEARNING STYLE QUADRANTS

McCarthy says that every teaching or training enterprise should begin by creating a desire. The teacher must take the time to discuss what s/he hopes to do and why. Teachers as well as students need to understand the reasons for doing what they do. The teacher must create a desire in the students. That is the teacher's primary task.

This strategy uses David Kolb's model of a circular progression divided into four quarters (or quadrants) and further divided into right and left mode aspects. The quadrants are experience, reflection, conceptualization, and experimentation. McCarthy suggests that the teacher progress through all four quadrants in the same sequence each time, increasing levels of complexity and sophistication to suit the developmental levels of the students.



### Quadrant One: Integrating Experience with the Self.

**Step One: Creating an Experience.** The objective—to enter into the experience, to engage the self, and to integrate personal meaning with the experience. The method—Interaction and discussion, the favorite method

for the Style One learners. The skills—brainstorming, listening, speaking, interacting, and pulling together diverse elements. Imagination and Innovation are encouraged. The role of the teacher is motivator.

**Step Two: Reflecting on Experience.** The objective—to examine the experience. The method—discussion, but the focus has changed. The students are now asked to step outside the experience and look at its parts. The teacher's role in this second step is to share with the students the personal values s/he sees and understands in the material being presented.

### Quadrant Two: Concept Formulation.

**Step Three: Integrating Observations Into Concepts.** The objective—to integrate the experience and the reflections on the experience with the material to be presented. The right mode, Style Two learner is most comfortable when integrating reflections on experience into developing concepts. This calls for a synthesis of steps one, two and three. While some discussion will be necessary to check out the connections the students are making in this step, the teacher is the primary actor, pulling it all together. The method—informational, but the information is based on a class experience, and the information presented includes class reactions to that experience. The role of the teacher is teacher.

**Step Four: Developing Theories and Concepts.** The objective—the teacher presents the "acknowledged knowledge," the actual information, facts or techniques. The students are asked to examine the whole in light of these techniques. The material is broken down into its parts, and the parts are examined and analyzed. It is step four that is presented in our schools, almost exclusively. It is a vital step. "Acknowledged knowledge" forms a standard of excellence that must be kept uppermost in presenting any material. But it is simply not enough. We must encourage the diversity of perceiving and processing knowledge and experience by allowing for the four different learning styles. To present only step four (and step five, the manipulation of fixed materials and concepts, which follows) is to teach exclusively to those students on the abstract conceptualization end of the perception continuum. This ignores the needs of other students. Paramount in quadrant two is the organizational skill of the teacher, who must present the material sequentially.

### Third Quadrant: Practice and Personalization.

**Step Five: Working on Defined Concepts (Reinforcement and Manipulation).** In step five, the students react to the givens. They complete work sheets, use work books, etc. These materials reinforce the concepts and skills taught in quadrant two. This is a traditional step, as was step four. While one can easily see the value of these two steps for all learners, teaching exclusively in these two modes makes it extremely difficult for any other type of learner to succeed.

**Step Six: "Messing Around" (Adding Something of Themselves).** Students participate in the activities and

groups they choose. Nothing is boring and mundane. Real Integration begins with step six; personality interests and skills unique to the students come into play as does media integration. The students approach the content in their own, most comfortable way. The teacher's role is coach.

#### **The Fourth Quadrant: Integrating Application and Experience.**

**Step Seven: Analyzing for Usefulness or Application.** Students are now at the point where they can show what they have learned in their own best way. The teacher evaluates and remediates. In this phase, the evaluation should look at basic materials that all must master and unique "proofs" of learning chosen by the students themselves. Step seven requires students to apply what they have learned in some personal, meaningful way. This analysis should be based on relevance to the content/skills and on originality. Many choices are possible. Some of the factors that dictate choice include the number of students, the amount of time, and how accustomed the students are to having choices. The teacher's role is evaluator/remediator.

**Step Eight: Doing It Themselves and Sharing What They Do With Others.** The students share what they have done with each other. Now the diversity really shows. The students share and watch. They listen to each other. They see the diversity of creativity, and they learn that everyone's gifts are valuable. They are ready to go back "around the circle" in ever increasing complexity.

#### **SUMMING UP**

In implementing the 4Mat System it is key for the teacher to:

1. Recognize his/her own dominant learning style and how this affects teaching.
2. Make an effort to use methodologies that are suited to different learning styles. Take one step at a time, and remember to take into account her/his own tolerance for using new methods.

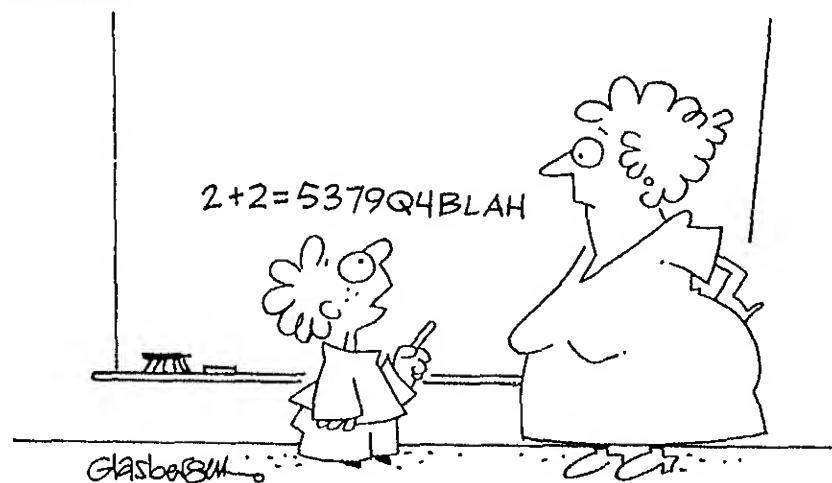
3. Observe and discuss with students their dominant learning styles.
4. Value each learning style.
5. Encourage opportunities for students to teach one another through their dominant modes.
6. Become acquainted with the research on right and left brain dominance.
7. Become aware of his/her own brain dominance.
8. Use both right and left brain techniques in the classroom.

Through this process, students come to accept their styles and learn to capitalize on them. At the same time, they develop a healthy respect for the uniqueness of others and develop the ability to learn in alternative styles without the stigma of "being wrong."

Educators must continue to search for more potent methods to discover individual skills and learning preferences. It is imperative to incorporate methodologies appropriate for all students. Learning must be structured so learners can teach each other. Give them a reason; teach it to them; let them try it, adding something of themselves; and let them teach it to themselves and share it with each other. All four styles of learning are equally valuable. Each has its strengths and weaknesses. In most schools, however, it is only the two (the analytic learners) who do well. McCarthy proposes a teaching strategy to reach all learners, to "let all students get the chance to shine 25% of the time."

The 4Mat model was developed to allow students:

- to develop their natural gifts,
- to understand and appreciate the natural gifts of others, and
- to repeat experiences with increasing complexity, granting each the opportunity to refine her/his best style while experiencing and developing alternative styles.



*"The right side of my brain is mad at the left side, and they aren't on speaking terms."*

# THE HUNTER MODEL

An instructional model developed by Madeline Hunter. Also known as ITIP, Success-Based Education, etc.

## OVERVIEW

The Hunter Model of Instruction places the teacher first and foremost as the decision maker in the classroom. After years of observing teachers, Madeline Hunter and her associates reported that effective instruction occurs when teachers make professional decisions about what goes on in the classroom. Hunter synthesized these findings into a model.

Known by several names throughout the United States and overseas (A Clinical Theory of Instruction, ITIP, Mastery Teaching, Target Teaching, the UCLA Model, the Hunter Model), it has been used successfully at elementary, secondary and college levels.

There are three main components of the Hunter Model: Identification of teacher decisions; a seven-part method of lesson design; and teacher evaluation.

## THE TEACHER AS DECISION MAKER

In the Hunter Model the teacher is responsible for making decisions before, during, and after interactions with students. According to Hunter, many teaching decisions are made "intuitively or by default." The model describes a method for bringing those decisions to the conscious level. Those decisions which research validates are translated into objectives and then into teacher/student behavior.

The model sets forth three types of teacher decisions. These are: (1) what content to teach; (2) what the student must do to demonstrate learning; and (3) what to do to facilitate learning.

1. *Lesson Content*. "What will I teach tomorrow?" The answer should be more than a subject tag, such as, "Geometry I" or "U.S. History." Increasing student learning requires answering several questions. How does classroom work mesh with goals of the school district, the state or parents? How much do the students already know about the subject? What prerequisite knowledge is needed?

The guiding principle of the content decision is that students must acquire basic concepts before more complex learning can be achieved. For example, foreign language students exposed to irregular verbs before they master regular verb conjugations will certainly have difficulty. Their confusion might even make it difficult to retain what they have already learned.

After deciding lesson content, the teacher must stick to the lesson plan. Digression or interesting "bird walks"

should be avoided because they interfere with learning. On the other hand, if a better idea emerges during class, the teacher should pursue it.

2. *Learning Behavior of the Student*. The extent of student learning determines if and when the teacher introduces new material, explains further, extends practice or changes approaches. One way to gauge the student's knowledge is to look at how the student acquires the knowledge or skills. Does she/he read, calculate, discuss, listen, observe? Hunter recommends a combination of these approaches as there is no one best way to learn.

Another way of assessing learning is to look at student output. Output includes term papers, test results, oral or written answers, projects—any activity that shows independent recall or application. If output demonstrates learning, the decision can be made to proceed with the next lesson. If not, reteach the lesson or extend the practice.

Hunter illustrates how input/output behaviors are linked to content by distinguishing them graphically. In the following example, the specific content is capitalized and the student behavior is written in italics:

The student will collect specimens of TWO CATEGORIES OF PLANTS and describe the CHARACTERISTICS OF EACH.

3. *Teacher Behavior*. What does the teacher do to facilitate learning? Regardless of subject area and specific objectives, teachers must rely on principles that increase student motivation, the speed and amount of learning, retention rate and creative transference. According to Hunter, deliberately and artistically using principles of learning is the hallmark of the master teacher.

## BASIC LESSON DESIGN

The Hunter Model prescribes seven steps for planning and implementing a lesson. This procedure is applicable to all subjects and grade levels. It is not intended as a rigid format, but serves, rather, as a framework to facilitate planning, instruction and evaluation of learning.

1. *Anticipatory Set*. As early as possible in the class period, the teacher should make a statement about the day's lesson that will "tease" the curiosity and pique interest. This will take students' minds off other things and focus attention on content.

An anticipatory set for a botany lesson might be, "Can you explain why cucumbers and okra could legitimately be served in a fruit salad?" Such a question directs

attention to the attributes which distinguish fruits from vegetables. Responses provide diagnostic information about previous knowledge and guide the teacher in preparation of the subsequent lesson.

**2. Objective and Purpose.** Students learn more effectively when they know what they're supposed to learn and why it is important. Teachers should not assume that students recognize the relevance of lesson content. Consequently, the teacher should never fail to state, in words meaningful to the students, what will be learned and how it is useful.

Examples of setting objectives and purpose are:

"Today we'll find out about calories so you can regulate your weight while eating things you enjoy. Would that be of interest to you?"

"We'll analyze different kinds of propaganda so you can be aware of which types are being used on you."

It may be that you wish, for specific reasons, not to reveal your objective at the beginning of the lesson. This is your decision. But even though the objective is not stated, it should be known to the teacher and should eventually be made clear to the students.

**3. Instructional Input.** Students must acquire information about the knowledge, process or skill they are expected to learn. This information can be transmitted in a variety of ways: through direct experience, films, demonstrations, discussions and lectures. While there are many ways to learn, there is no best way. The teacher must select the best mix of methods to implement his/her objectives. Regardless of which methods are used, following three basic principles will help teach the objective more effectively.

- *Determine basic information and organize it.*
- *Present basic information simply and clearly using many examples.*
- *Model the information or process so students can directly perceive the process or product.*

**4. Modeling.** The case for modeling is simple: one picture is worth a thousand words. The undeniable impact of modeling makes it a central feature of mastery teaching.

A model can be concrete, such as a model of the human heart; a replication, such as a picture; or symbolic, such as a diagram or map. A model also can be verbal, written or dramatized. Effective models share important characteristics.

- a. *A model should be easily distinguishable from other similar things.* Unless the critical attributes of a model are obvious, student attention can be attracted to non-relevant characteristics, resulting in confusion.
- b. *Models should avoid controversial issues.* Models on issues which arouse emotions can divert learner attention from what is being taught.
- c. *Models must be accurate and unambiguous.* Misconceptions created early in learning are much more difficult to correct than those occurring later.

Therefore, models must be accurately produced by the teacher or other qualified source.

- d. *Models should eventually lead to nonexamples.* Once students are familiar with the critical attributes of a specific set of models, you may wish to introduce more ambiguous ones so students can discriminate based on the presence or absence of critical attributes just learned.

When it isn't possible to model what you mean, ask students to draw on their memory and experience.

**5. Check for Understanding.** The reality of teaching tells us that just because we teach a lesson doesn't mean necessarily that students learn. Comprehension should be checked on the spot—not the day after while correcting papers.

Vague queries like, "Now, does anyone have a question?" do not elicit information the teacher can use to make a pedagogical decision. Usually, such questions result in the teacher proceeding unaware that students are lost. Hunter suggests the following techniques to accurately check understanding.

- a. *Signaled Answers.* The teacher poses a question or statement and every student signals the answer. Signaling can be done in several ways. To indicate the number of a multiple choice answer, students can show that number of fingers under their chin (to keep neighbors from copying). They can show thumbs up for a true answer, down for false, to the side if they don't know. Teachers can improvise signaling to match the exercise.
- b. *Choral Responses.* The second way to check student understanding is to ask a question and have the group respond in unison. Choral responses alert the teacher to the strength of the students' correct responses. This also is an excellent way for a student who doesn't know an answer to learn without humiliation.
- c. *Sample Individual Response.* The teacher poses a question to the whole class, waits a few seconds, then calls on individual students. Overall comprehension is gauged on the basis of the class level each student represents. For example, if a bright student is confused, you can infer the rest of the class is in the dark. If less advanced students respond correctly, the class is probably ready to move on.

Sample individual responses also can be produced in writing. The students are asked to write a brief response to the question. The teacher then circulates among the students to check if the majority have responded correctly. Well-written responses can be read to the class.

Another technique works well with older students in classrooms with lots of board space. Most of the students can be sent to the chalkboard to work problems. In just a

few minutes, the teacher can check responses and provide immediate feedback to the class.

You might think of these different ways to check understanding as "dip sticking" techniques that allow quick, accurate adjustments in the teaching process.

**6. Guided Practice.** Hunter likens new learning to wet cement; both can be easily ruined. A mistake early in learning can have long-lasting consequences that are hard to eradicate. Therefore, it is essential that a student's first exposure to new material be skillfully guided by the teacher.

Early practice must be designed and conducted according to four psychological principles. They are presented below in terms of guidelines for designing effective practice.

- Present only a short, digestible amount of practice material at one time. (Always use meaning, not mathematics, to divide content into parts).
- Designate short practice periods so the student exerts intense effort and has an intent to learn.
- For new learning, use massed practice. For older learning, use distributed practice.
- Give specific feedback as quickly as possible.

**7. Independent Practice.** Independent practice is appropriate only after the teacher is reasonably sure students won't make serious errors. If assigned too early, students will practice mistakes rather than work successfully by themselves. Independent assignments, whether verbal or written, require students to apply newly learned concepts and improve factual recall. Homework almost always falls into the category of independent practice; as a result, it should be preceded with guided practice in the classroom.

## TEACHER EVALUATION

The third component of the Hunter system is methodology which trainers, supervisors, and principals use to give feedback to teachers. The goal of teacher evaluation is the same as the classroom goal explained above: achieving excellence by increasing learning. Effective master teachers should be able to extend their skills through professional observation.

Supervisors must realize that using a checklist to make sure a teacher uses all seven lesson elements is not abuse of the model. Teachers who understand the model may have good reasons for omitting certain parts. Before judging a teacher, the observer must find out the reasons behind such decisions.

In sum, the Hunter model is intended to increase learning by (1) identifying professional decisions the teacher must make; (2) supplying research-based, call-effect relationships to support those decisions; (3) encouraging the teacher to use data from students' classroom situations to augment or correct those decisions (Hunter, 1980).

In Madeline Hunter's own words, "This model is deceptively simple in conceptualization, incredibly complex in application. There is a quantum leap from known propositions to creating artistic procedures." Those interested in using the model should be cautioned not to expect too much too soon. Thorough in-service, experimentation in the classroom, and professional supervision are mandatory for successful implementation of the Hunter Model.



# MASTERY LEARNING

An instructional model developed by Bloom, Block and Guskey.

Mastery learning is a system to organize the presentation of material to students. While the idea of mastery learning has been around for a long time, most people think of Benjamin Bloom, Jim Block and Tom Guskey when Mastery Learning is mentioned. This is the model described here.

Mastery Learning assumes that almost all students can learn if:

- learning objectives are well defined (the teacher knows what the students need to learn)
- learning objectives are appropriately sequenced (the teacher has a plan for what needs to be learned and in what order, etc.)
- careful instruction occurs
- enough time is allowed
- student learning is checked regularly and feedback (and help) is given immediately, and
- students are tested on what is taught.

Mastery Learning helps students to better organize what they learn, use teacher feedback, pace their learning and correct their errors. Teachers who use Mastery Learning are likely to find that their role in the classroom changes. From a presenter and judge, they become a leader who helps all students to learn successfully. With Mastery Learning, students develop positive attitudes toward the subject and their own abilities. Research conducted by Black, Burns, Guskey and Gates consistently shows that Mastery Learning in the classroom produces greater student learning than nonmastery approaches, and that, in most instances, everyone does better—slower students as well as faster students. Moreover, the difference between fast and slow students seems to decrease with Mastery Learning. Slower students learn more rapidly, many students progress beyond their teachers' expectations and teachers report being more effective with a greater number of students. As an extra bonus students in Mastery Learning classes seem to retain or remember more. Mastery Learning appears to work well across all levels of education, although there is greater improvement among younger students in elementary and junior high schools according to Guskey and Gates.

## MASTERY LEARNING MODEL.

There are eight steps to this systematic teaching process.

### 1. Clearly Define Instructional Objectives.

First the teacher defines the objectives of instruction, what is to be taught and why. The teacher makes a thor-

ough analysis of the course or unit content and then states clearly what students are expected to accomplish. At this time, the teacher also determines the criteria for mastery of each objective; i.e., how both teacher and student will know when the student has mastered the material. While this is usually one of the most difficult tasks in the Mastery Learning approach, teachers and teaching interns told J. Okey, in 1977, that they had more positive attitudes toward the philosophy and practices after they had used Mastery Learning in their elementary classrooms for just three weeks.

### 2. Task Analysis.

To carry out task analysis the teacher decides what the student must already know (the prerequisite skills) to be able to learn the new concepts or skills successfully. The teacher also decides in what order to present the material to make it easier to learn the new concept or skill (the learning sequence). In other words, two questions must be answered. What knowledge or skills do the students need to have, and in what sequence should they learn the new material.

### 3. Assessing Current Student Skills and Knowledge.

The teacher uses a "pre-test" or other assessment process before teaching any new skill or concept to determine each student's current level of knowledge or ability. This helps the teacher select the next skill or information to be taught.

### 4. Orienting Students.

The teacher explains the purpose of the skill or knowledge to be learned. At the beginning of each lesson everyone understands the expected outcome of the lesson and why it is important.

### 5. Initial Teaching.

The lesson is presented. It focuses on the objective, providing various approaches, adequate practice time and many opportunities for student learning and student success. During this time the teacher pays close attention to the students' practice and gives prompt, specific feedback and suggestions on how to improve.

### 6. Assessing Mastery.

The teacher checks the students for mastery of the skill or knowledge according to the criteria established in Step 1.

7. What steps to take next are then decided. For example, if a student is still struggling to 'get' the objective, the teacher makes corrective and positive suggestions and provides more practice. It is important that teachers

have a sufficient variety of teaching strategies and materials to fit the many different learning styles of students for, without this variety, students may not reach the desired learning outcome OR

8. Students who have mastered the objective can move to enrichment or extension activities planned by the teacher.

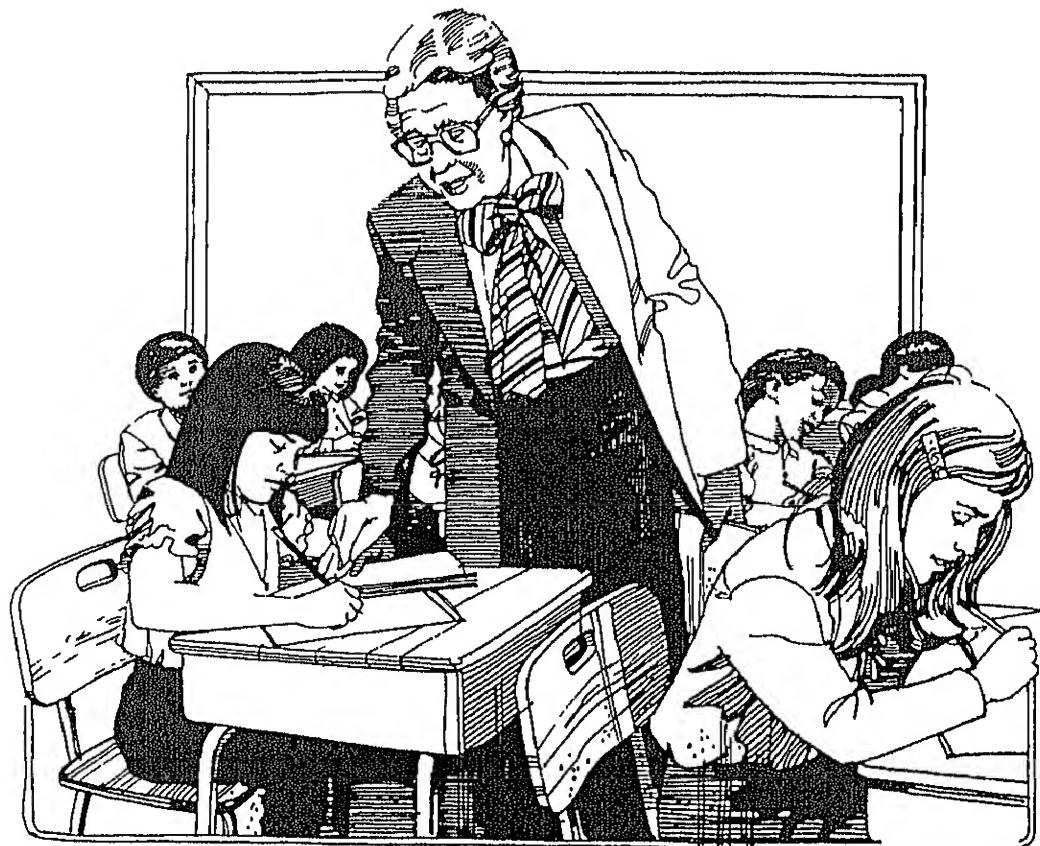
Mastery Learning is not magic, nor is it different from what good teachers have been doing for years. It is a powerful instructional technique because it provides a framework—a discipline or way to plan lessons—that insures that important steps are taken, in the same order, every time, and that nothing significant is overlooked or left out of the teaching process.

And, Mastery Learning is a powerful technique. An analysis of 27 well-designed studies shows that achievement, while varying from study to study, is overwhelmingly positive. Students tend to retain what they learn longer with Mastery Learning, both over the short term (two - three weeks) and long term (four months). Students are engaged in learning for a larger portion of the time they spend in Mastery classes and require decreasing amounts of remedial or corrective time over a series of instructional units. Put another way, students remember longer, work

harder and longer, and seem to learn to learn faster with Mastery Learning. Finally, students in Mastery Learning classes develop more positive attitudes about learning and their ability to learn.

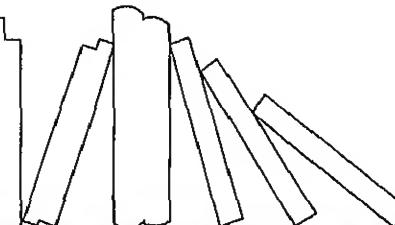
Teachers also benefit from Mastery Learning. They see improvement in learning outcomes, develop positive attitudes about teaching and their role as teacher, reflect higher expectations for all their students, and feel greater personal responsibility for learning outcomes.

Mastery Learning may also be useful on a district level. Joseph Murphy and Phillip Hallinger's research suggests that the most instructionally effective school districts have a district-wide preferred approach to instruction. The advantage of building or district-wide adoption of Mastery Learning (or any other systematic instructional approach) includes increased opportunities for peer support and increased collegial interaction as the system is developed and implemented. Teachers can help one another develop course objectives and criteria for mastery. They can attend to the learning sequence between grades as well as within a grade. In addition, there are the benefits of continuity since students will know what to expect from grade to grade and from teacher to teacher.



# AT LAST: GOOD NEWS FROM A STUDY OF SCHOOL IMPROVEMENT

By Susan Loucks-Horsley



Few times in history rival the present for bad news about education. Commission reports and research studies present a similarly grim picture. Yet many educators, at all levels, have been in classrooms where teachers and students pursue learning with excitement; in schools where goals are set simply so they can be achieved and higher ones aspired to; and in districts where careful planning and high-quality development work contribute to challenging experiences for students. Are these random events? Are they few and far between? Are they exceptions to the rule? At least one large, national study of school improvement<sup>1</sup> has resulted in findings that answer these questions with a loud, emphatic "No!"<sup>2</sup>

There are a great many schools around the country where careful, thoughtful efforts to improve have been successful in many ways, accruing benefits to students, teachers, and the school as a whole. And these successes are not random. They have resulted from schools taking advantage of the conscious and long-term commitment of federal and state governments to encourage and support school growth by providing a few extra resources and an array of strategies and programs from which to choose.

The findings from the Study of Dissemination Efforts Supporting School Improvement allow us to look at schools and improvement-oriented change from a somewhat different perspective and in a somewhat different light than other studies that yielded discouraging results. First, unlike many recent surveys and commissioned reports, we are looking at schools that have made a commitment to improvement and have done so by implementing a new curriculum or instructional practice. Second, unlike the well-known Rand Change Agent Studies,<sup>3</sup> we are looking at schools supported by federal and state programs that have either evolved better ways of helping schools improve or are using strategies different from those examined by Rand.

Before turning to the findings in more detail, a word or two about the study itself. Funded by the U.S. Department of Education in 1978, the study was a multi-year effort to examine the effects of strategies the government used to encourage school improvement, primarily by the dissemination of new practices developed with federal support. We traced 61 different innovations<sup>4</sup> from their federal sponsors to 146 districts and schools, and to over 400 classrooms in ten states. With questionnaires and interviews, we surveyed teachers, principals, superintendents, central office coordinators, external consultants, trainers and facilitators, and state and federal policy makers. We

carefully depicted classroom use of the innovations with the implementation, change in practice, and fidelity to the developer's core components. We then focused on 12 locations for a year-long intensive field study, using qualitative techniques to probe the dynamics of the school improvement process.

Our 146 schools were drawn from long lists of schools that had, as far back as 1974, either (1) received funding to develop innovative projects through ESEA; (2) adopted nationally validated programs through the Education Department's National Diffusion Network, or state-validated programs through their state department of education's dissemination program; or (3) purchased special education materials from publishing companies developed in schools and funded by the Office of Special Education.

When we sampled schools from these lists, we had a 75 percent "hit rate," that is, we found a large majority of these programs still in place, and many were thriving. Furthermore, when we visited teachers in classrooms, we found more than just "lip service" given to the innovative practices. There were concrete, frequently major, changes in classroom approaches, strategies, and materials. And, through discussions with teachers, building and district administrators, and with individuals external to the district who had provided training and support, we were able to discern what factors contributed to the success of the programs.

One factor was the commitment of teachers. While the need for such commitment is no newsflash, the way we found it developing was. More often than not, teachers in successful schools had not spent a great deal of time in "ownership building" activities before the practice was introduced. Rather, they learned about the practice, attended training, and only through using it and seeing good results did their commitment grow and deepen. Often this meant "suspending disbelief," not knowing if the practice would work, but being willing to give it a try. Sometimes it was pressure from administrators that got teachers to the training, but many were glad they participated once the impact on students was evident. While such mandating is not recommended, neither is a protracted period of analysis, planning, and commitment-building. Real commitment only takes hold and flourishes with obvious benefits to students, and this can happen successfully in an environment where doing (not planning) is emphasized, where risk-taking and trust are the norm.

Another factor contributing to successful change was the existence of curricula or instructional practices that

were carefully developed, well defined, and determined to be effective. The history of education is replete with fads, good ideas that do not work, and research findings looking for an application. All of these waste time and resources, and we can no longer afford to invest in them. Our study found that where improvement projects were successful, people had chosen or developed specific practices that "fit" the everyday reality of teaching and the classroom; i.e., they were "classroom friendly." They were clearly defined, that is, you would know when you were using them correctly. And they had been tried out enough times with a high enough success rate to be determined effective. There are lots of practices being introduced into schools that do not meet these criteria; for example, microcomputers (which often do not answer the question, "What will I do with one computer and 30 kids?"); research findings such as "time on task" (which often do not help a teacher know, "How do I make that happen?"); and good ideas brought back from conferences that are the brain-child of one teacher and have worked with amazing results in his or her single classroom. We learned from our study that there are dozens of programs available through such sources as the National Diffusion Network, state education agencies, and regional service centers that do meet our success criteria, and are far less expensive (up to twenty times) to adopt or adapt than developing practices from scratch. Where these were implemented well (as described below), schools succeeded in their efforts to improve.

A third factor contributing to successful change was training by credible people -- often former teachers -- that included follow-up activities. There are two important points here. Trainers from outside the district, and even the region, can be quite helpful in assisting teachers to master new skills, but only if they themselves have experience using the same skills in real classrooms. Ivory tower trainers cannot know exactly how a "kid like Johnny will respond to a particular presentation," or how to adjust the materials for "kids like Sarah." But while this kind of real-life experience is key to the success of trainers, they must also have skill in working with adults, which requires different approaches than working with children and youth. Knowledge of adult development, group process, and training strategies is part of the repertoire of good adult trainers.

A second point related to this factor is the need to finally dispense with the one-shot, hit-and-run workshops that have traditionally characterized inservice training—that is, if meaningful change is the goal. We know that changes in what happens between teachers and students are what really improve schools, and that such changes are difficult to bring about. So a good training program takes place over time, introducing new skills and behaviors gradually, and increasing expectations as mastery is achieved. Because those skills and behaviors will be used in the classroom, and because teachers, like children, are different in their learning styles and rates, individual

coaching in the classroom setting is optimal. Also regular problem-solving and sharing sessions among teachers can decrease isolation, increase skills, and develop additional commitment to "staying the course" while the rough spots are struggled through. Since the kinds of questions teachers ask, and the kinds of concerns they express as they try out a new practice change with experience, so should the kinds of help and support they receive.<sup>6</sup> This phase of implementation is vitally important if changes are to happen.

A fourth factor we found in instances of successful change was that assistance and support can and should come from people in a variety of roles, not just the principal, as many studies of school effectiveness would lead us to believe. Of course, it is impossible for a school to change if the principal actively works against it, but we found numerous instances where principals took a back-seat to teacher leaders, central office coordinators, and in some cases, parents.

What is important here is that there are many leadership functions needed during a change effort, and in different schools different people will have the talent, resources, commitment, skills, time, and/or influence to play them. Such functions as commitment building, training, goal-setting, monitoring, and follow-up assistance—are more logically played by one person or the other, depending on the school and the particular change being made. While it is important for one person to do the "orchestration" of the program (this may or may not be the principal), a team composed of a variety of role groups can be called upon to provide leadership. We found such sharing of leadership to be a successful approach to improvement projects.

A final factor we learned contributed to successful change was attention to all phases of the change process: Initiation, Implementation, and Institutionalization. Much of the literature on school improvement emphasizes the need for careful planning, needs assessment, and ownership building in the Initiation phase. We discovered, as noted earlier, that there is often too much attention paid at this stage, too many resources and too much time spent, before teachers and administrators actually do anything different. Often people are tired of all the meetings and the planning and have no energy or interest left when implementation finally arrives. Then when it does, an initial training session, or an agreement to "let us do it!" is all that transpires. We learned, as noted earlier, that more attention to implementation in the form of good, solid training, and follow-up coaching and support are needed to achieve mastery of truly new approaches to teaching and learning.

A unique contribution of our study to understanding the change process is what it takes to accomplish the last phase: Institutionalization. It turns out that even when people within a school have all mastered a new approach or a new curriculum, forces outside of their classrooms can undermine continued use. These can be as catas-

trophic as discontinuation of funding, a change in the superintendent or school board that no longer sees the new practice as a priority, or a new state mandate that focuses the required resources or time on something entirely different. Or it can be normal everyday organizational occurrences, such as new or reassigned teachers arriving at the school, no one ordering the required materials or equipment, or a job change by the project's coordinator.

While there is not much that can be done about some of the more major "threats to institutionalization," if they are thought about early in the effort, most can be avoided. Some strategies to consider are: routine training for new teachers; establishing a line item in the budget, having a co-coordinator, or at least a back-up person share responsibility for the project; and getting the new practice written into the curriculum guidelines of the school, or better yet, the district. Anchoring the practice firmly in the education system by making appropriate organizational arrangements is the best way of ensuring continuing support and use.

There is no one way to ensure the success of a school improvement project. However, the factors that our study determined to be important, when taken together, increase the chances for success. With the economic crunch facing schools today, and the relatively large amount of resources required to launch a meaningful change effort, using what we know is the only way to

maximize the chances that our investments are good ones. The prospect of better education for today's kids makes it worth it.

Susan Loucks-Horsley is the Associate Director of The Regional Laboratory for Educational Improvement for the Northeast and Islands

#### ENDNOTES

1 Conducted by The NETWORK, Inc., in collaboration with The University of Texas Research and Development Center for Teacher Education, American University's Knowledge Transfer Institute, The Center for Policy Research, and UCLA's Center for the Study of Evaluation.

2 David P. Crandall and Susan F. Loucks, People, Policies and Practices: Examining the Chain of School Improvement, Vol. X: Executive Summary (Andover, Mass.: The NETWORK, Inc., 1983). See also Educational Leadership theme issue, November, 1983.

3 Paul Berman and Milbrey W. McLaughlin, Federal Programs Supporting Educational Change, Vol. IV: Summary (Santa Monica, Calif.: Rand Corporation, 1975).

4 In the study, we use the terms "innovation" and "new practice" interchangeably, meaning a definable product, program, or process that requires its users to change their behavior.

5 The Practice Profile methodology was developed collaboratively with the developers of the concept of Innovation Configurations at the University of Texas Research and Development Center for Teacher Education. See Susan F. Loucks and David P. Crandall, The Practice Profile: An All-Purpose Tool for Program Communication, Staff Development, Evaluation, and Implementation (Andover, Mass.: The NETWORK, Inc., 1981); and Gene E. Hall and Susan F. Loucks, Innovation Configurations: Analyzing the Adaptation of Innovations (Austin, Tex.: R & D Center for Teacher Education, 1978).

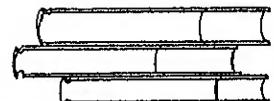
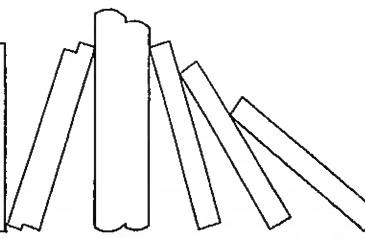
6 Gene E. Hall and Susan F. Loucks, "Teacher Concerns as a Basis for Facilitating and Personalizing Staff Development," Teachers College Record, 1978, 80(1), 36-53.



*"I hope those of you who turn out to be failures won't blame us."*

## RURAL RENEWAL: AN INSTITUTE FOR RURAL TEACHERS

by Toni Haas



Each year the Institute for the Enrichment of Rural Teaching plays host to rural teachers from across the nation. Meeting in Aspen, Colorado for 5 days the teachers look at ways small communities can enhance learning opportunities in rural school districts.

The Institute is a recent venture co-sponsored by the National Rural Education Association (NREA), and the Aspen Center for Environmental Studies (ACES). The NREA was founded to meet the needs of rural schools. It is a voice for all educators involved in rural education. ACES is a non-profit educational organization dedicated to building ecological awareness. Both Institutions pursue the goal of expanding educational opportunities in rural areas and small communities. Both encourage research projects and studies.

The Institute for the Enrichment of Rural Teaching is a national program. Participants are nominated by state teachers' organizations, centers for rural studies, state affiliates of rural education associations and by local districts.

Last year the Institute attracted 30 teachers from 9 states: Oregon, Iowa, California, Colorado, Minnesota, Nebraska, Ohio, Indiana and Kansas. This was the first Institute and it focused on identifying community resources that could be used to enrich the curricula of small and rural schools.

Those attending the Institute formed friendships, made contacts and shared feelings. Teachers from elementary and high schools attended workshops and lectures, visited local schools and community centers and discussed curriculum. Highlights included tours of alternative private schools and foundations around Aspen as well as trips into town to sample the cultural life, an evening at the Aspen Music Festival and dinner at the Crystal Palace. Out of this experience came plans for a second Institute. An important goal of conference planners this year was to have each state sponsor at least two rural teachers and cover their conference expenses.

The Institute generates considerable enthusiasm. The need to converse and collaborate with other rural teachers even gave rise to a new publication—The Country Teacher—which in its first issue carried articles on professional growth, math techniques for the rural primary classroom, teacher profiles, computer applications and other features.

This year the Institute took place July 22nd through July 26th. Building on last year's theme, the Institute con-

centrated on specific projects that can be implemented in a variety of settings. Elliot Wigginton and students from the Foxfire project in Rabun County, Georgia conducted two days of intensive sessions. Wigginton, creator of Foxfire and author of the best selling autobiography about his teaching career "Sometimes a Shining Moment," believes that teachers must take the lead in school reform. An active teaching method needs well-trained and inventive teachers. A compelling speaker, Wigginton shared his successful teaching strategies showing participants how to design courses using a "hands-on" approach to learning. Wigginton worked with teachers to develop community projects tailor-made to their own situations.

The nation's most visible rural teacher, Elliot Wigginton is widely respected by Institute participants.

Elliot Wigginton gave me a new perspective on learning techniques, says Marcie Duncan. I am already planning math lessons with confidence. I know that his teaching methods will produce results. Even in first grade I can see children understanding what is the goal and what strategy is needed to reach it. Every year I used to spend hours making games, charts and posters. When Wigg said children learn better when they make their own learning materials...well it came as a shock. But now I know he's right. It lets children take responsibility for their own learning. It's a better way. I can't wait to try it.

Pauline Peterson put it this way:

Elliot Wigginton literally breathed life into our profession. I look forward to trying out his ideas in my classroom. In particular, I want to do some more peer teaching.

At the Institute Dr. Gell Browning, an educator and researcher who uses brain dominance technology to assess, design and implement organizational programs, conducted her popular workshop "Rediscover your Brain." It covered ways of expanding brain potential and developing interpersonal skills. Founder of the Institute for Career Advancement, Dr. Browning explained how brain dominance techniques can be applied to develop leadership skills, to understand communication patterns and behaviors, and to encourage creative problem solving and accelerated learning.

Some of the teachers discovered immediate applications for the material presented in Dr. Browning's workshop. Said one of them:

Next Fall I will begin testing what I have learned. I want to identify the learning styles of freshmen in my high school. My experience in learning styles is limited, but thanks to the Institute I feel more confident.

Two of the five full-time naturalists at the Institute are Tom and Jody Cardamone who also double as co-directors of ACES. The Cardamones are committed to the kind of environmental education which develops a personal sense of responsibility for the appreciation, conservation, preservation and restoration of our natural world. Both are field naturalists who like to share their expertise and teaching skills in the outdoor classrooms around Aspen. Another naturalist is Susy Ellison who holds a degree in Wildlife Biology from Cornell. She is responsible for the development and teaching of natural science projects used in schools.

The outdoor experiences and field excursions with ACES staff received the most comments from participants.

Said Valerie Kucher:

I feel the ACES staff are exceptional. I now realize the need for students to understand and respect the outdoors. At the Institute we learned activities and games such as 'Predator and Prey'—games which I can easily build into my curriculum. The ACES staff showed us, by doing, that creative teaching goes a long way in helping students remember what is taught. I plan to use a lot more of this tactile, kinesthetic teaching in the future.

Susan Alber of Lewellen, Nebraska said:

I was intrigued by the environmental experience. I would like to set up a course of study for elementary students to learn some of the self-discipline and self-knowledge skills I was exposed to. I also talked with Joan Flanagan who built a biodome with her junior high students. I am going to do this with my elementary students when I get back home. The teaching ideas are limitless and I've learned how to pull other subjects into my science classes—something I always had a hard time doing.

Pat Dickman expressed his feelings this way:

I thought I was good on such topics as the five senses, seasons and seeds, for example. I thought I presented these in the best way for my children to learn. Now, I know I should let them tell me what they want to learn and we will start from their wonderings, not from what I thought they wondered about. The naturalists and other speakers helped me see so much more. I have a great resource available, the Wapsiplincon River, which just brought to mind the question, 'Why is Oxford Junction called Oxford Junction?' Maybe, while visiting the river this Fall we can wander to the remains of the mills along the

river. Hopefully, curiosity about the mills, the town and the town name will develop.

Clearly, the Institute fires participants with enthusiasm, instilling confidence, pride and a deepened sense of responsibility. This is important. Rural education today must deal not only with the farm crisis but all the issues facing society at large—changes in the family structure, the technology explosion, shifting political patterns, etc. The Institute provides a forum to discuss these issues, and time to study and talk with experts about the national, social, economic and political trends affecting the nation. These trends and changes are impacting rural schools and the rural teacher needs to be aware of them and build skills to cope. Teaching methods must be adapted to this rapidly changing scene.

Rural schools are different. They provide the warm, informal, friendly environment that many believe necessary to develop leadership skills. A great percentage of our country's leaders attended rural schools of 500 students or less—close to 75% in fact. This is something to think about, and something for rural teachers to be proud of.

The Mid-continent Regional Educational Laboratory collaborates with the Institute for the Enrichment of Rural Teaching by providing planning and scholarship support for one teacher from each state. For information about the Institute please contact Dorothea Farris, ACES Education Coordinator, at Box 8777, Aspen, Colorado, 81612 or Joe Newlin, National Rural Education Association, Colorado State University, Fort Collins, CO 80523.



# Achieving Excellence

*A+*

*A+* is a site-based school management system that leads to:

- Increased student achievement
- Equity of performance by students of different backgrounds
- Efficiency in students' time-on-task
- Effectiveness in teaching
- Excellence, as viewed from the perspective of the future educational needs of the society.

**Principals and teachers are experts.**

They've been on the firing line, sat through dozens of inservice sessions and adopted many new programs. *A+* is a site-based management system for expanding and using that expertise. It isn't another new program. It's a systematic way to organize and improve what's already going on.

*A+*

*A+* is powerful.

It's based on solid research about school effectiveness, organizing it into a unique framework that pulls all the pieces together. It includes diagnostic tools and step-by-step procedures to develop realistic goals and cost-effective strategies that lead to effectiveness.

*A+*

*A+* is easy to use.

There's no jargon. If it couldn't be said in 2-4 pages of common sense language, it wasn't included. And, it's laid out step-by-step. The strategies recommended are simple to understand and have been found workable by practicing educators.

*A+*

*A+* is practical and cost effective.

Most of the improvement strategies can be implemented without additional information or training. And, *A+* can be implemented on-site in a series of 1-2 hour faculty work sessions using a cooperative approach that involves teachers working with each other. Only a small leadership team needs to be trained to use *A+*.

For further information call or write:

Jo Sue Whisler  
12500 E. Iliff, Suite 201  
Aurora, CO 80014  
(303) 337-0990

# Tactics for Thinking

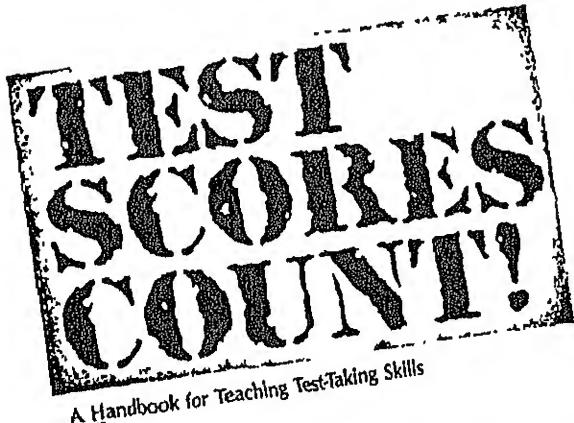
TACTICS for THINKING is a training program to help teachers teach students to take command of their own learning. It is designed to teach the thinking skills and processes students need now and to meet the challenges of the future.

McREL offers TACTICS for THINKING training for trainers and/or for teachers.

- 3-Day, Denver-Based Institutes, scheduled for February, April, October and December, are ideal for districts or schools that want to train one or several trainer-of-trainers or that want to experience the program before committing the time or money for district- or school-wide participation. Groups are kept small for maximum attention and participation. College credit is available.
- 3-Day On-Site Training are available on 3 consecutive days or spaced over a period of several months to allow field-testing and evaluation of the program.
- 4-Day On-Site Training, available only spaced over time, includes strategies for integrating thinking skills instruction into current curriculum, assessment and instructional practices and support for the development of a school district model.

For further information call or write:

Jo Sue Whisler • McREL • 12500 E. Illiff Ave. #201 • Aurora, CO 80014 • (303)337-0990



"From the day a child enters kindergarten, he/she is screened, classified, grouped, tracked, promoted/not promoted, and labeled according to his/her performance on standardized tests." Factors other than content knowledge influence test results. One such factor is "test-wiseness." Most researchers and practitioners think test-wiseness should be taught ... to improve the validity of test results and to equalize opportunities for all students.

This comprehensive handbook identifies the key skills needed for successful test taking, describes guidelines for teaching these skills and contains lesson suggestions for each grade level.

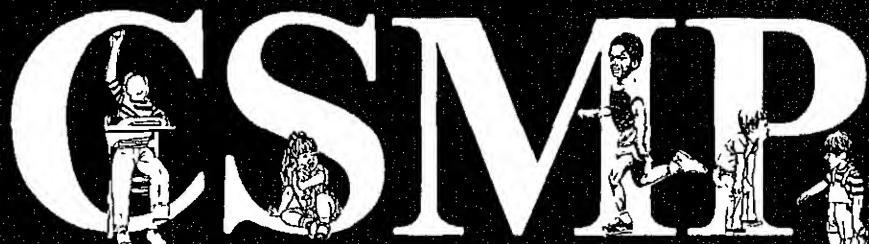
To order send \$9.45 to:  
McREL  
4709 Bellevue Avenue  
Kansas City, MO 64112

## The McREL Product & Service Catalog

This catalog provides educators, administrators, teachers and other important decision makers information about some of the more important research-based products from McREL.

For your free copy, write to:  
McREL  
4709 Bellevue Avenue  
Kansas City, MO 64112

## Comprehensive School Mathematics Program



CSMP, The Comprehensive School Mathematics Program, is an exciting, complete K-6 elementary school math program that addresses the need for developing higher-order thinking skills as well as teaching the basic skills of mathematics.

CSMP has been adopted by over 150 districts in 35 states, Washington, D.C., Puerto Rico, and Canada. CSMP was designed for students of all ability levels and has been successfully adapted to specialized audiences including gifted students, compensatory education groups and bilingual populations.

### UNIQUE FEATURES

- Focus is on problem solving
- Research and classroom based with a five-year development and evaluation cycle at each grade level
- Appropriate for all ability levels
- Deals with the affective domain of learning
- Develops expanded basic skills—not just minimal competencies
- Provides unified, interrelated up-to-date content, completely sequenced in spiral form
- Employs "non-verbal" languages and a "pedagogy of situations" to engage children immediately and naturally with the content and applications of mathematics
- Facilitates whole-group, small-group and personalized instruction
- Takes a balanced approach to concepts, skills and applications
- Offers extensive teacher in-service.

### EVALUATION

In March, 1984 CSMP was approved as an "exemplary" **Educational Program That Works** by the Joint Dissemination and Review Panel of the U.S. Department of Education. The Panel verified a positive impact on curricular recipients of sufficient magnitude to have educational importance and to be reproducible at other sites. It also upheld the validity and reliability of CSMP claims of superior performance in certain mathematical processes as well as higher enthusiasm and interest.

Dissemination of the curriculum is supported, in part, by the National Diffusion Network (NDN) of the Department of Education.

For further information about CSMP, call or write Clare Heldema

McREL  
4709 Belview Avenue  
Kansas City, MO 64112  
(816) 756-2401